A REVIEW OF THE RESEARCH ON CHILDREN AND YOUNG PEOPLE WHO DISPLAY HARMFUL SEXUAL BEHAVIOUR ONLINE

What is developmentally appropriate online sexual behaviour, do children and young people with online versus offline harmful sexual behaviours (HSB) differ, and is there an association between online and offline HSB?

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EVERY CHILDHOOD IS WORTH FIGHTING FOR

Impact and Evidence series

This report is part of the NSPCC's Impact and Evidence series, which presents the findings of the society's research into its services and interventions. Many of the reports are produced by the NSPCC's Evaluation department, but some are written by other organisations commissioned by the society to carry out research on its behalf. The aim of the series is to contribute to the evidence base of what works in preventing cruelty to children and in reducing the harm it causes when abuse does happen.

FOREWORD: THE CONTEXT FOR THIS LITERATURE REVIEW

In 2008, the AIM (Assessment Intervention Moving on) project developed a framework to help guide practitioners in their assessments and interventions with adolescent males aged 12–18 years who had engaged in harmful sexual behaviours (HSB) online using new technologies. This framework was available from AIM and was known as iAIM (Internet Assessment, Intervention and Moving On) (www.aimproject.org.uk). Developments in online technologies and social media since 2008 have prompted the need to revisit and update the resource in line with emerging trends and issues.

The NSPCC are collaborating with AIM to revise and upgrade iAIM by developing a set of new practice guidance with two main objectives. The first is to increase practitioner and professional awareness to the prevalence and impact of online HSB. The second is to provide support to help practitioners manage any HSB risk, including that which has an online element. This is through the development of appropriate case formulation alongside a more holistic risk assessment of the HSB being displayed by the child or young person.

To ground this practice guidance in research evidence, the NSPCC's Evaluation Department have carried out this current literature review into children and young people's online HSB. This unique review has revealed a growing, yet limited, evidence base on which to inform our understanding of online HSB. Exploration of the adult online offender research literature was also part of this review to allow for a comparison between young people with online HSB and adult online offenders. Doing so enabled us to draw upon the broader body of adult literature to explore certain issues that are currently unexplored among young people. While we do not suggest that the research findings from adults will be generalisable to young people, this provides a more thorough exploration of current online HSB/sexual offending knowledge and evidence to help guide the redevelopment of the next version of the iAIM practice guidance.

Further research is being carried out by the NSPCC to explore the characteristics of the children and young people referred to the NSPCC's HSB service ('Turn the Page') for online or technology-based HSB. The research findings will be available in early 2017.

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GLOSSARY OF TERMS

Online harmful sexual behaviour (HSB): For the purpose of this review, 'online HSB' includes all sexual acts using the internet or technology that are harmful to the young person and/or others (such as the use of extreme/illegal pornography including indecent images of children (IIOC), online grooming and/or sexual solicitation of children and young people, and the sexual abuse of children and young people through images or chat, etc).

Indecent images of children (IIOC): The term IIOC is used throughout this literature review in line with the definition used by CEOP (CEOP, 2012) and to encompass self-taken sexual images that may not have initiated from sexual abuse (such as those made as a result of 'sexting'). This includes images depicting child sexual abuse at all levels of the COPINE scale.

The COPINE scale: This is a rating system used in the UK to grade the severity of IIOC. It was designed as a 10-point scale and has been adapted by the sentencing advisory panel (SAP) into a more condensed five-point scale to assist with the prosecution of IIOC offences. The SAP 5-point scale is as follows (see the Sentencing Guidelines Council, 2003, for more detail):

- Level 1 – Images depicting erotic posing with no sexual activity
- Level 2 – Non-penetrative sexual activity between children, or solo masturbation by a child
- Level 3 – Non-penetrative sexual activity between adults and children
- Level 4 – Penetrative sexual activity involving a child or children, or both children and adults
- Level 5 – Sadism or penetration of, or by, an animal

Extreme/illegal pornography: Pornography can be typically defined as soft-core (containing sexually arousing depictions that are not fully explicit) or hard-core (sexually arousing depictions that are very graphic or explicit), both of which could be classed as 'mainstream' pornography and are legal. Illegal pornography includes IIOC and any other 'extreme pornographic images' listed under Section 63 of the Criminal Justice and Immigration Act (Criminal Justice and Immigration Act 2008, 2008). 'Extreme pornographic images' include the portrayal of: an act that threatens a person's life; an act that results, or is likely to result, in serious injury to a person's anus, breasts or genitals; an act that involves sexual interference with a human corpse; or a person performing an act of intercourse or oral sex with an animal (whether dead or alive). In this review, 'extreme/

illegal pornography' refers to IIOC and the extreme pornographic images outlined above.

Sexting: The NSPCC defines 'sexting' as "the exchange of self-generated sexually explicit images, through mobile picture messages or webcams over the internet" (NSPCC, 2016). It can also refer to written messages that are sexual in nature. This definition of sexting is used in this review.

Grooming: The Oxford English dictionary definition of grooming is to "Prepare or train (someone) for a particular purpose or activity". In relation to paedophilia, they define this as an act to "prepare (a child) for a meeting, especially via an internet chat room, with the intention of committing a sexual offence". Expanding on this, the NSPCC draws attention to the emotional element of grooming: "Grooming is when someone builds an emotional connection with a child to gain their trust for the purposes of sexual abuse or exploitation." References to online grooming within this review encompass both of these definitions.

KEY FINDINGS

Very little is known about the online harmful sexual behaviours (HSB) displayed by children and young people, making it difficult for practitioners to determine the associated risks. This literature review has been carried out to explore and synthesise current research findings regarding: the developmental appropriateness of children and young people accessing indecent images of children (IIOC); if children and young people who display online HSB differ to those displaying offline HSB; and the cross-over between online and offline HSB.

For the purpose of this review, 'online HSB' includes all sexual acts using the internet or technology that are harmful to the young person and/or others (such as the use of extreme/illegal pornography including IIOC, online grooming and/or sexual solicitation of children and young people, and the sexual abuse of children and young people through images or chat). The term IIOC has been used in this review in line with the definition used by CEOP and to encompass self-taken sexual images that may not have initiated from sexual abuse (what is commonly known as 'sexting').

The main purpose of this review is to inform the development of new and revised practice guidance to increase practitioners' and professionals' awareness of the prevalence of online HSB, and to improve their assessment and management of the risk posed by this behaviour. This is a joint enterprise between the NSPCC and AIM project.

Key findings:

- A small proportion (between 4 per cent and 17 per cent) of young people view violent and/or illegal pornography including IIOC and bestiality, and this appears to be associated with frequent pornography use. Motivations for viewing online pornography differ and some viewing is accidental.
- While the behaviour is illegal, the developmental appropriateness of children and young peoples' viewing of IIOC is unknown due to a lack of detail about the images viewed, such as the nature of the images and the ages of those in them. A spectrum of behaviours is likely in relation to the viewing of IIOC, ranging from the experimental to more problematic and harmful. There is also a link with 'sexting'.

- Based on four research studies carried out with males aged 12–20 years old, the backgrounds, characteristics, friendships and sexual interests of young males known to have viewed IIOC appear different to those with a contact sexual offence. Parallel findings are reported in the research with adults where additional differences are identified.
- Adult online and contact (dual) sexual offenders appear to be a distinct group with more similarities to contact sexual offenders. There is no comparable research with children and young people.
- Sexual reoffending rates of online and/or offline HSB among young people who view IIOC are low (less than 1.9 per cent reoffending rate found in two studies) and there is a small amount of cross-over between online and offline sexual offending/HSB (less than 3.6 per cent cross-over in two studies, with an additional study reporting higher rates). Parallel findings are reported in the research with adult offenders, yet issues with the reliability of reported and detected online or offline sexual offending are highlighted.
- There were definitional differences regarding online HSB/online sexual offending across the studies identified for this review. Our understanding of young people who view IIOC is based on only four studies of adolescent males or young adults. No research exploring the characteristics of children and young people with other forms of online HSB, aside from that relating to IIOC, was identified.

Further research will be carried out by the NSPCC to explore the characteristics of the children and young people entering the NSPCC's HSB service ('Turn the Page') for online or technology-based HSB.

EXECUTIVE SUMMARY

Background

While children and young people are at risk of falling victim to online sexual abuse, they can also be perpetrators. This may include the making, viewing and distribution of indecent images of children (IIOC) or other types of illegal/harmful pornography, grooming other children and young people online, and the online sexual victimisation of children and young people through images and/or chat. The term IIOC has been used in this review in line with the definition used by CEOP and to encompass self-taken sexual images that may not have initiated from sexual abuse (what is commonly known as 'sexting').

Studies estimate that 3–15 per cent of IIOC offences are committed by young people, and preliminary research findings provide evidence that some children and young people are involved in the online grooming and sexual solicitation of other children and young people. Anecdotal information from the NSPCC's 'Turn the Page' programme for children and young people with harmful sexual behaviour (HSB) also suggests that just less than half (45 per cent) of those receiving this service in 2015 had some form of online or technology-related HSB.

Our knowledge as to the online HSB displayed by children and young people is, however, very limited. There has been no attempt to synthesise current research findings or to draw parallels with the literature on adults. This makes it difficult for practitioners to develop an informed judgement about the risk posed by a young person with sexually problematic online behaviour.

The Internet assessment, intervention and moving on (iAIM) assessment tool (www.aimproject.org.uk) was developed in 2008 as a guide for practitioners assessing adolescents who have accessed IIOC using new technologies. However, there was little research at that time on which to base this tool and significant developments in technology mean it is now outdated. The NSPCC and AIM are, therefore, working together to develop new and revised practice guidance to increase practitioners' and professionals' awareness of the prevalence of online HSB, and to improve their assessment and management of the risk posed by this behaviour.

To ground this practice guidance in research evidence, the NSPCC's Evaluation Department have carried out this current literature review into children and young people's online HSB.

Methodology

This literature review aimed to explore three key questions regarding:

1. The developmental appropriateness of children and young people accessing IIOC;

2. If children and young people who display online HSB differ to those displaying offline HSB; and

3. The cross-over between online and offline HSB among children and young people.

While we aimed to primarily review the research relating to children and young people, research with adults was also reviewed where this was absent or lacking.

A systematic search strategy for research published between 2000 and 2015 was applied to five different research platforms containing published and unpublished (grey literature) research. Predefined search terms were used and 758 articles were identified – 453 after duplicates were removed.

Key findings

This literature review led to a number of key findings in relation to our three research questions.

1. The developmental appropriateness of children and young people accessing IIOC

Figures suggest that around a fifth to a half of all children and young people have been exposed to pornography online by the age of 16 – more so among older adolescents and males. Studies generally suggest that between 4 per cent and 17 per cent of children and young people have viewed violent pornography and/or illegal pornography including IIOC and bestiality, and the likelihood of this appears to increase with the frequency in which they view pornography online. Prevalence rates vary according to study design and definition, however, and higher rates of exposure to violent pornography among young people have been noted.

As the research exploring children and young peoples' viewing of IIOC does not investigate the characteristics of the victim(s) in the image (for example, age, relationship to the young person viewing the image, etc), it is not possible to comment on the age-appropriateness of this behaviour. They may be viewing images of similar-aged peers, which could be classed as age-appropriate, albeit illegal, sexual

behaviour. However, they may be viewing images of younger children and infants, which may indicate a deviant sexual interest.

While some young people will have viewed IIOC accidentally, young people may be motivated to view these images out of curiosity, sexual deviancy, and/or peer pressure. These motivations may change over time, however, and sexual interest may become a primary motivating factor following increased exposure. While the prevalence of the behaviour is unknown, young people are known to trade IIOC (including images of younger children) and the reasons they view IIOC are similar to those given by adult offenders. It is unclear whether the collecting and cataloguing of IIOC is as important for young people as it appears to be for adults.

The cross-over between sexting and IIOC

Sexting blurs the boundaries between the making, viewing and distribution of self-produced sexual images and IIOC, and around one fifth of IIOC are said to be self-produced. Sexting is more common among older young people who spend more time texting and on their phones. Those who sext are also more likely to be sexually active and may be more likely to be involved in sexually risky behaviours. Both experimental and abusive circumstances have been identified in which young people sext.

2. The characteristics of young people who view IIOC compared with those who display HSB offline

Only four studies were identified that explored the characteristics of young males (aged 12–20) known to have viewed IIOC compared with other young people who have sexually abused children/young people offline. These findings suggest that young people who view IIOC are older than offline offenders, come from more stable backgrounds, have a better level of education and have less previous convictions and anti-social behaviour. However, they also show a greater level of sexual interest in children, have greater friendship difficulties and display more cognitive distortions than offline offenders. These findings are similar to those comparing adult online offenders with offline offenders, which also highlights psychological differences and differences in offence supportive attitudes and self-control.

No research was identified that looked at the characteristics of children and young people who display other forms of online HSB, including online grooming.

Dual offenders as a high risk group

None of the research with young people explored dual offending (the perpetration of online *and* offline HSB) among children or young people. However, the research with adults suggests that dual offenders represent a distinct sub-group who are similar to contact offenders in regards to their high rates of unemployment, access to children, childhood difficulties and experiences of sexual abuse, previous convictions, and substance misuse problems. However, dual offenders appear to have a higher level of sexual deviancy and a sexual interest in children than contact offenders and online offenders, along with greater empathy deficits, offence supportive beliefs, and self-management deficits. This may be related to their commission of contact sexual abuse. It is unclear how much these findings relate to children and young people with dual online and offline HSB.

3. The cross-over between online and offline HSB

Viewing online pornography has been found to influence the young person's/young adult's sexual behaviours and attitudes. In particular, there appears to be a relationship between the frequent viewing of pornography and viewing illegal/extreme pornography and the young person's sexually coercive or offline HSB. Frequent viewing of pornography also relates to the young person's increased desire to try out what they have seen, yet not all frequent viewers will necessarily have viewed extreme/illegal images.

Only a small proportion of young people who view IIOC online appear to sexually reoffend (online and/or offline; less than 1.9 per cent reoffending rate found in two studies) and reoffending rates among this group are lower than young people with offline HSB (up to 7 per cent reoffending rate found in these two studies among young people with offline HSB). This is based on the findings from just two studies carried out with young people, yet it is supported by a larger body of research with adult online sexual offenders. When online sexual offenders do sexually reoffend, it is more likely to be with another online sexual offence than an offline sexual offence.

Nevertheless, there is a small amount of cross-over between online and offline sexual offending (less than 3.6 per cent cross-over in two studies, with an additional study reporting higher rates) and a relationship between the viewing of IIOC and offline sexually coercive behaviour. This is dependent, however, on the type of reporting used within a study; studies with adult offenders that ask them to self-report their offending history tend to identify a higher rate of cross-over between online and offline sexual offending than those who rely only on officially detected rates of sexual offending.

It is unclear whether sexual fantasies linked to the viewing of IIOC may influence offline sexual offending and how this may relate to the 'first person' sexual abuse of child avatars within virtual reality worlds (such as 'Second Life').

Risk factors for sexual reoffending and contact sexual offending

The research base exploring the predictors of sexual reoffending and contact sexual offending among online sexual offenders is unavailable in relation to young people and limited in relation to adults. Prior contact sexual offending, prior criminal history, sexual interest in children, access to children, and having few psychological barriers to acting on deviant sexual interests may increase risk. It is unclear whether the content and severity of IIOC viewed by online sexual offenders, along with the size of their collection of images, can be used to predict risk of contact sexual offending. However, viewing IIOC/extreme pornography has been found to contribute to the risk of sexual reoffending among adult contact sexual offenders.

Grooming and online and offline sexual offending

Research with adults highlights two types of online groomers. 'Fantasy-driven' offenders groom children and young people online to satisfy their sexual fantasies and engage in cybersex using online-only contact. 'Contact-driven' offenders use the internet to locate and groom children and young people with the intention of contacting/meeting them offline for sexual purposes. One study was identified that showed the existence of these grooming behaviours among children and young people.

Research with adult sexual offenders and two studies with young people and young adults highlights an overlap between online sexual offending, viewing and requesting IIOC, and offline sexual offending, to varying degrees.

Discussion

What do the research findings suggest regarding the assessment of those with online HSB?

A small number of studies have explored the use of standard sex offender risk assessment tools with adult online offenders. However, the findings from these studies suggest that they are unlikely to be effective at estimating risk among this group. Even those that have been adapted for use with online offenders appear to overestimate risk in a proportion of cases and may only work for those who also have a history of contact offending. No research was identified that attempted to assess the risk of children and young people with online HSB. The blurring of the boundaries between the online and offline worlds

of children and young people may increase the complexities of risk assessment among those with online HSB.

Limitations of the research literature

There are a number of limitations in the literature exploring young people and adults' online HSB. Very little research has been carried out with children and young people, and the available research is based on very small samples of male adolescents or young adults. Across all studies, there are definitional differences in online sexual offending and the research with adults shows how offending rates differ according to the method and timing of reporting/disclosure. This means that comparisons of online and offline offenders are likely to include some dual offenders in each group, which may skew the findings and mask true differences between them.

While the research with adult offenders was explored in this review, it is unclear how applicable these findings are to children and young people. Nevertheless, the findings from the research with young people who view IIOC are similar to the findings from research with adult online offenders.

Directions for future research

It is important that further research exploring children and young peoples' online HSB is carried out. This should include further exploration as to the motivating factors behind these behaviours, the importance of the online environment, the prevalence of online HSB among children and young people with learning difficulties, and dual online and offline HSB.

A REVIEW OF THE RESEARCH ON CHILDREN AND YOUNG PEOPLE WHO DISPLAY HARMFUL SEXUAL BEHAVIOUR ONLINE

Introduction

Since its conception in the 1960s, the internet has revolutionised the way in which we live our lives, and interact and communicate with others. Figures from research carried out in 2015 (Miniwatts Marketing Group, 2016) suggest that 46 per cent of the world's population use the internet, and in Europe and North America the internet is used by 74 per cent and 88 per cent of the population respectively.

For children and young people, spending time on the internet is now a major part of their daily activities, taking over other popular activities like watching television. An Ofcom survey published in 2015 showed that 98 per cent of 12–15-year-olds in the UK use the internet (Ofcom, 2015). In the 2016 annual media monitoring report by Childwise (2016), it is reported that 5–16-year-olds spend an average three hours on the internet each day, compared with an average 2.1 hours watching TV. This figure rises from three to five hours a day for 15–16-year-olds. The most common activity carried out online on a daily basis is the use of social media, as reported by 63 per cent of 11–15-year-olds in a recent survey involving seven EU countries (Mascheroni and Cuman, 2014). Indeed, 21 per cent of 8–11-year-olds and 74 per cent of 12–15-year-olds in the UK reported having a social media profile (Ofcom, 2015).

The way in which children and young people access the internet is also changing; it is now commonly accessed through a mobile phone or tablet, with 75 per cent of 5–15-year-olds using a tablet to access the internet, and 34 per cent of 12–15-year-olds mostly using their mobile phones to go online (Ofcom, 2015). Importantly, much of

young people's internet use is unsupervised; 64 per cent of young people in the UK have online access in their bedroom (Mascheroni and Olafsson, 2014). Given that 55 per cent of 11–16-year-olds surveyed in the UK reported feeling more able to be themselves online (Haddon, Livingstone and EU Kids Online network, 2012), the internet may now form a large part of the young person's developing self-identity and allow for self-expression in ways that were previously impossible.

While the internet offers countless benefits, its dark side means that children, young people and adults with deviant interests are now more able to freely act upon these and communicate with other likeminded individuals. Sexual offending in particular has evolved rapidly online, meaning that it is now much easier to access and share indecent images of children (IIOC), play out deviant sexual fantasies, and meet potential victims online. A freedom of information request to the Ministry of Justice by McManus and Almond (2014) revealed an increase in IIOC offences between 2005–2006 and 2012–2013; there was an 18 per cent increase in the possession of IIOC and a 35 per cent increase in taking, making and distributing IIOC. Additionally, just over 8,000 transactions of indecent images of children were reported to CEOP in 2012 for UK-based users, containing a total of 70,000 still and moving images (many that are duplicates) (CEOP, 2013a). This latter figure is double that for the previous year and, worryingly, a fifth of these images appear to have been self-generated by the child/young person displayed in the image.

More recently, the Internet Watch Foundation (IWF, 2015) identified 68,092 global URLs confirmed as containing child sexual abuse imagery, having links to the imagery, or advertising it in 2015, a rise of 118 per cent from the previous year. Of the victims in these images, 69 per cent were assessed as aged 10 or under and 85 per cent were girls. Thirty-four per cent of images were classified as category A, whereby they showed sexual activity between adults and children, including rape or sexual torture.

While children and young people are at risk of falling victim to online sexual abuse, they can also be perpetrators. However, knowledge as to the online harmful sexual behaviours (HSB) displayed by children and young people is very limited and there has been no attempt to synthesise current research findings or to draw parallels with the literature on adults.

Online HSB by children and young people

Harmful sexual behaviour (HSB) can be defined as "one or more children engaging in sexual discussions or acts that are inappropriate for their age or stage of development. These can range from using sexually explicit words and phrases to full penetrative sex with other children or adults" (Rich, 2011). This behaviour is displayed on a continuum from inappropriate and problematic sexual behaviour through to abusive and violent sexual behaviour (Hackett, 2010). In the same way that adult sex offenders can engage in illegal sexual activity and sexually abuse children online, children and young people can also engage in HSB online and access material that may be inappropriate for their age and developmental stage.

The private and anonymous nature of the internet (Aebi et al, 2014) allows young people to change the way in which they present themselves to others (Davidson and Gottschalk, 2011; Quayle and Taylor, 2001; Simpson, 2013). Indeed, 72 per cent of young people in a recent UK survey by Ofcom (2015) believed that "most people behave in a different way online to when they talk to people face to face".

It also provides them with a source of sex education material as well as a means of satisfying their sexual curiosity or helping them to form their sexual identity (Boies, Knudson and Young, 2004; O'Sullivan, 2014; Stonard et al, 2014) at a time when sexual development and curiosity is at its peak. A US survey of 14–17-year-olds found that 41 per cent had talked about sex online and 10 per cent had talked about sex online with a stranger (O'Sullivan, 2014). While some of these sexual conversations may be defined as developmentally appropriate, some may be classed as harmful towards others and some may represent the young person's own online sexual victimisation.

Children and young people also interact with strangers online, playing games against people they do not know (8 per cent of 8–11-year-olds and 20 per cent of 12–15-year-olds), adding people to their friends/contact list who they only know online (7 per cent of 12–15-year-olds) and sending personal information (3 per cent of 12–15-year-olds) or photos/videos of themselves (4 per cent of 12–15-year-olds) to people who they have only had contact with online (Ofcom, 2015). In a survey of children in 25 EU countries, 23 per cent of 11–13-year-olds and 43 per cent of 14–16-year-olds made online contact with someone they did not know offline, and 5 per cent and 14 per cent respectively met an online contact offline (EU Kids Online, 2014). However, interacting with strangers was not always seen as risk taking by young people (Martellozzo, 2013) and a study of young people who had been groomed online found that most were aware that they were chatting to an adult (Wolak et al, 2008).

While some academics argue that risk-taking behaviour is part of young peoples' identity development (Atkinson and Newton, 2010) and may not lead to serious problems, for some young people problematic internet use may be an extension of other problems they are experiencing offline (Mitchell et al, 2007), indicating a more serious issue. Much of the research in this area focuses on children and young people's victim experiences online and much less so regarding their harmful online behaviours to themselves or others. However, as can be seen in the literature above, there is a level of overlap in the findings, and the risks young people take that place them in danger of being victimised may also link to their online HSB towards others.

There is a scarcity of information regarding the prevalence of online or image-related HSB by children and young people. Nevertheless, studies have estimated that 3–15 per cent of IIOC offences are committed by young people (Carr, 2004; Finkelhor and Ormrod, 2010; Fortin and Roy, 2006). For example, Wolak et al (2011) report that 5 per cent of those arrested for possessing IIOC in the USA in 2006 were under 18 years, and 18 per cent were aged 18–25. Other studies suggest that a significant proportion of online sexual abuse is carried out by young people and young adults towards other young people. Wolak and Finkelhor (2013) report that 8 per cent and 13 per cent of arrests for sex crimes involving online sexual communication with minors (whereby the offender brought up sex or sex-related topics during online interactions) in 2009 were cases in which the offender was under the age of 18 (figures represent cases where the offender met the victim online or already knew them offline, respectively) and 43 per cent and 36 per cent of offenders were aged 18–25.

Additionally, Mitchell et al (2014) report data from the Third Youth Internet Safety Survey (YISS-3) in 2010 that suggests that the unwanted online sexual solicitation of young people (unwanted requests for young people to engage in sexual activities/sexual talk or to give personal sexual information) is largely carried out by other young people and young adults (under 25 years); 43 per cent of perpetrators were under the age of 18 and 24 per cent were aged 18–25. The majority of these sexual solicitations took place on social networking sites.

In addition to the figures reported in academic research studies, anecdotal information suggests that almost half (45 per cent, n=125) of the children and young people being assessed for or receiving intervention on the NSPCC's 'Turn the Page' programme for harmful sexual behaviour from January to October 2015 (out of 280 cases) were determined to have some form of online or technology-related HSB. This was commonly combined with offline HSB, and only 14

per cent of these cases (n=18) were referred for online/image-related HSB in the absence of known offline HSB during this timeframe. The online HSB being displayed by these children and young people ranged from a developmentally inappropriate use of pornography (for example, compulsive pornography consumption and the use of pornography by very young children) through to the use of IIOC and making their own images of sexual abuse (research exploring the online HSB and the characteristics of these children and young people is currently underway).

The lack of literature and understanding of online HSB by children and young people means it is very difficult for practitioners to make an informed judgement about the risk posed by a young person presenting with sexually problematic online behaviour. Practitioners can find it difficult to keep up to date with the development of new technologies or may not have the technological knowledge to understand the implications of the young person's behaviour. Recent research has also found that professionals do not view online sexual abuse as being as relevant or impactful as offline sexual abuse, which may influence their assessment of this behaviour (Hamilton-Giachritsis et al, 2016). Further developments in the research literature along with developed guidance and assessment tools are, therefore, vital.

iAIM assessment tool

The Internet assessment, intervention and moving on (iAIM) assessment tool (www.aimproject.org.uk) was developed in 2008 as a guide for practitioners assessing adolescents who have accessed IIOC using new technologies. However, there was little research at that time on which to base this tool, and significant developments in technology mean it is now outdated. The NSPCC and AIM project are, therefore, working together to develop new and revised practice guidance to increase practitioners' and professionals' awareness of the prevalence of online HSB, and to improve their assessment and management of the risk posed by this behaviour. To ground this practice guidance in research evidence, the NSPCC's Evaluation Department have carried out this current literature review into children and young people's online HSB.

Aims of the current literature review

The current literature review was carried out to answer three main questions:

1) Children and adolescents' online sexual behaviour and access to IIOC: what is developmentally appropriate and when does this become problematic or abusive?

2) What is the profile of children and young people who display online or IIOC-related HSB and how does this compare with the profile of contact offenders?

    a. What influences/predicts the onset of online offending and contact offending?

3) Is there a link between online and offline HSB in children and young people?

    a. What is the risk of reoffending following an online and/or offline offence and what factors influence this?

    b. What factors influence desistance from online offending?

    c. What role does online offending play in contact offending:

        i. Does it influence the risk of contact offending?

        ii. Is there a link between looking at IIOC, fantasy and contact offending?

        iii. Is there a link between the severity of the IIOC viewed and contact offending?

        iv. What factors predict contact offences once online sexual offending is already established?

    d. What role does the internet play as a means for young people to groom other young people?

This represents the first known attempt to review the literature on children and young people's problematic online sexual behaviours. Not only will this form the basis on which to revise the iAIM practice guidance, it will also highlight areas where further research is needed in order to improve our understanding of this issue. The term IIOC is used throughout this literature review in line with the definition used by CEOP (CEOP, 2012) and to encompass self-taken sexual images that may not have initiated from sexual abuse. This includes images depicting child abuse images at all levels of the COPINE scale, from erotic posing to violent sexual acts (see the Sentencing Guidelines Council, 2003).

Review methodology

A systematic literature search was carried out across five different research platforms using predefined search terms (see Appendix A for full details). We also looked at the reference list of any relevant articles identified from the search for further articles of interest.

We searched for articles published between 2000–June 2015, including only those written in English. While the search of the NSPCC Library catalogue included grey literature, the four other databases covered published literature only. The relevant hits included primary empirical studies as well as literature reviews and meta-analyses. We have also included studies commissioned by the NSPCC that were underway in 2015 but whose findings are published later than the search date.

The main focus of this literature review was research with children and young people, yet piloting of the search strategy revealed very limited literature available on these populations. Our search was, therefore, widened to also include research based on adult populations to allow for comparison and to widen our knowledge of issues that have not yet been explored among young people.

The search strategy led to the identification of 758 articles – 453 after duplicates were removed. The abstracts of all of these articles were read, along with the main text of articles that appeared relevant to the review.

Sexual offending and the internet

Before continuing with the findings from the literature review, it is useful to define the different types of online sexual offending known to be carried out by adults and likely to be prevalent among some children and young people.

The internet serves many different functions for sexual offenders, including the following (Gallagher, 2007):

- gain access to IIOC,
- seek a child/young person to sexually abuse offline or online,
- sexually abuse children and young people online (for example, engage in 'cybersex' with a child/young person),
- offer/advertise children/young people for sexual abuse,
- incite others/conspire with others to sexually abuse a child/young person on and offline,
- socialise with others who share similar deviant sexual interests,
- share IIOC with other likeminded people.

New uses of the internet for sexual offending are also emerging in line with developing technology and social trends. For example, the IWF have noted an emerging issue with the 'Crowd funding' (raising monetary contributions from a number of people) of new, and more extreme, IIOC materials (personal communication, 2015). Additionally, the internet provides a space for offenders to engage in fantasy discussions of child sexual abuse, and virtual worlds such as 'Second Life' now provide a forum for offenders to act out the virtual sexual abuse of a child.

The above activities are not mutually exclusive and offenders may engage in one or more of these behaviours, with some suggesting that they should be viewed on a continuum (Robertiello and Terry, 2007). Nevertheless, categories of sexual offenders can be broadly defined based on the online and/or offline nature of their sexual offending:

- IIOC-only offender (may view IIOC online and/or offline). Research suggests there are different variations in these offenders depending on how they access, store, use and distribute IIOC (Krone, 2004).

- Online-only offender (for example, online groomers, those who engage in 'cybersex'/the online sexual abuse of a minor). There appear to be different typologies of online groomers, some who intend to meet up with the child/young person and others who do not (Briggs et al, 2011).
- Contact-only offender; no apparent online/image-related sexual activity.
- IIOC and contact offender; these are known as dual offenders and there may be many variations within this, such as abusing a child and making an IIOC with or without intention to distribute the image, abusing a child and viewing/sharing images, etc.
- Online and contact offender; also known as dual offenders; for example, grooming a child online to sexually abuse offline, abusing a victim offline and using the internet to further the abuse and/or communication with the victim.
- Online, contact and IIOC offender (dual offender); involved in all forms of sexual abuse.

There may also be those who engage in offline non-contact sexual offending (such as exhibitionism or voyeurism) who view IIOC online or engage in the online sexual abuse of a child. Some online-only offenders may attempt to justify and minimise their actions and the hurt caused by them on the basis that they had no physical contact with or directly abused a child (Winder and Gough, 2010). However, the law and the NSPCC are clear in stating that those who view, download and distribute IIOCs for sexual and/or commercial gratification are colluding in and furthering the abuse of the child.

Online sexual offenders may access IIOC in a number of ways, including the surface web (content that is searchable using internet search engines), deep web (content that cannot be accessed using internet search engines but can be accessed using direct search functions on a website or providing login details) and the "dark web" (content that has been intentionally hidden and cannot be accessed through standard internet browsers). Peer-to-peer (P2P) networks, which enable users to exchange files on their computers without going through a server, are a common way in which IIOC are shared with others online. Research has shown that those who use P2P networks to access IIOC have more extreme images, in terms of the level of sexual violence and the age of the victims in them, as well as having a greater number of IIOC than those who did not gain IIOC through P2P networks (Wolak et al, 2011). This may, therefore, suggest that the way in which IIOC are accessed influences the type and amount of IIOC viewed/collected.

Typologies of adult online offenders

Given the heterogeneous nature of online sexual offending and the different types of online offenders, a number of different typologies have been developed to help understand these differences in more detail (Beech et al, 2008; Elliott and Beech, 2009; Robertiello and Terry, 2007; Seto and Ahmed, 2014; Sheehan and Sullivan, 2010; Krone, 2004).

For example, Elliott and Beech's (2009) typology breaks IIOC offenders down into four groups: the periodically prurient who accesses IIOC sporadically, impulsively or out of general curiosity, without necessarily having a sexual interest in children; the fantasy only offender who accesses and trades IIOC for sexual reasons but has no known contact offences; the direct victimisation offenders who view IIOC online, groom young people online and also commit contact offences; and the commercial exploitation offenders who trade IIOC to make money. A more recent review of IIOC offenders by Merdian et al (2013) suggests that different subgroups of offenders can be defined based on the type of IIOC offending (fantasy versus contact-driven), the motivation behind their IIOC offending, and the social component of their IIOC offending. Nevertheless, the variation in types of online offenders makes typologies difficult to develop and sometimes they are not comprehensive or overlap. They have also not been tested with empirical research (Aslan, 2011).

Others have summarised the typologies produced by other research into three main groups; collectors of IIOC, travellers/solicitors who are trying to meet young people online, and producers who are looking for new victims to create new IIOC (Fortin and Roy, 2007).

Definitions and terminology used

As the internet has become the main forum for accessing and distributing IIOC, such offenders are often interchangeably referred to as 'internet/online offenders' and 'IIOC offenders'. It must be noted, however, that not all offenders interested in IIOC will use the internet to facilitate this and those who abuse children/young people online may not look at IIOC. For the purpose of this review, attempts have been made to distinguish between IIOC and online offenders when reviewing the findings of the studies published in this area. Where an article talks about offenders who are known to have IIOC offences only, these offenders are referred to as 'IIOC offenders'. For those known to have been involved in online grooming in the absence of any other online sexual behaviour, these are referred to as 'online groomers'. For others who have committed a series of online sexual offences (which may include online IIOC offending and grooming), or where an article refers to them only as internet/online offenders without further definition, the term 'online offender' is used.

Part 1a: Child and adolescent access to indecent images of children (IIOC): what is developmentally appropriate and when does this become problematic or abusive?

The first part of this literature review set out to explore children and young people's access to pornography and to understand the extent to which viewing IIOC may be a developmentally appropriate, albeit illegal, aspect of this. Very little research or discussion was found regarding the developmental appropriateness of accessing IIOC specifically. However, a body of research was identified exploring young people's intentional and unintentional access to pornography, and the viewing of extreme pornography and IIOC. The influence of pornography on the emotions, behaviours and attitudes of children and young people has also been explored, along with the overlap between IIOC and self-generated images sent as a 'sext'. This literature is reviewed in order to understand more about the sexually developmental/experimental behaviours of children and young people online and their accessing of IIOC. It must be noted, however, that the research focuses largely on young people above the age of 12/13 years and, as such, pornography use and its impact on young children remains largely unknown.

Young people's exposure to pornographic images online

A European Union (EU) survey of young peoples' internet use (aged 9–16 years) found that, across the EU, 20 per cent of young people had seen a sexual image online in 2014 compared with 18 per cent in 2010 (Mascheroni and Olafsson, 2014). However, a recent UK survey of 1,001 11–16-year-olds found that 47 per cent of the sample had been exposed to online pornography by the age of 16 (Martellozzo et al, 2016), revealing a higher percentage. Age and gender appear to play a role in exposure. Older teens were found to be four times more likely to have seen a sexual image online than younger teens (Livingstone et al, 2011) and in a US survey of college students, online pornography exposure before the age of 13 was found to be uncommon (Sabina et al, 2008). Martellozzo et al (2016) also found that older respondents (15–16 years) had seen online pornography more frequently than the younger respondents (11–14 years).

However, they found that 94.2 per cent of the young people who had been exposed to online pornography by the age of 16 had been exposed to this before the age of 14, and 58.9 per cent of these young people had been exposed to online pornography aged 12 and under. In relation to gender, Sabina et al (2008) found that 93 per cent of boys and 62 per cent of girls had been exposed to online pornography before the age of 18. Compared with girls, boys were more likely to have been exposed to online pornography at an earlier age, seen more images, seen more extreme images, and viewed images more often.

While some young people will have come across pornographic images accidentally, others will have accessed them intentionally.

Accidental exposure to pornographic images online

Martellozzo et al (2016) found that children and young people were as likely to accidentally see pornography online as they were to intentionally view it. This may happen through, for example, pop-ups or misleadingly named websites (Livingstone and Smith, 2014). Young people in particular may be at more risk of coming across images accidentally as they are frequent users of the internet (Aebi et al, 2014). Additionally, the use of tube sites and pop-up adverts by adult entertainment services to target previous users who have clicked on their sites means that once seen by a child – even if this was accidentally – online pornography can pop up more frequently on their computer, increasing their exposure to this material. In a US survey, Jones et al (2012) reported that 15 per cent of 10–12-year-olds and 28 per cent of 16–17-year-olds reported seeing pictures of naked people or people having sex in the last year without seeking out or intending to view this kind of material. A telephone survey of 16–17-year-old Australians also found that 60 per cent of females and 84 per cent of males had accidentally viewed pornography (Flood and Hamilton, 2003). However, Sabina et al (2008) found girls to have more involuntary exposure to online pornography than boys.

While initial exposure to pornographic images may be accidental in some cases, this may contribute to intentional exposure to online pornography. In a study by Ybarra and Mitchell (2005), young people who reported unintentional online exposure to pornographic images were also two and a half times more likely to report intentional exposure. Additionally, accessing pornography may not be pre-planned by the young person, but reactive to their online situation. Demetriou and Silke (2003) generated a fictitious website advertising free and legal games, which 803 people (of unknown ages) visited in 88 days. Once on the site, visitors also found links to adult hardcore pornography (illegal pornography was not advertised) and, despite coming to the website for non-sexual reasons, 60 per cent of visitors attempted to access hardcore pornography. The authors, therefore,

concluded that access to pornography could occur without prior planning or sexual arousal.

Intentional exposure to pornographic images

The identified surveys asking young people about their intentional viewing of pornographic images report intentional viewing rates of between 30–59 per cent (Flood and Hamilton, 2003; O'Sullivan, 2014; Peter and Valkenburg, 2011a). In the survey by Peter and Valkenburg (2011a), the 30 per cent rate of intentional viewing was reported to be similar to adults. Rates of intentional exposure were higher among boys (for example, 58.7 per cent of males compared with 25.2 per cent of females intentionally sought out online pornography in Martellozzo et al's [2016] study) and older age groups (Phippen, UK Safer Internet Centre and NSPCC, 2012). The variation in prevalence rates across studies may therefore be a result of factors such as cultural differences, the gender and age group surveyed, or the sampling methods used.

The most commonly cited reasons for young people accessing pornography are for curiosity, as an aid to masturbation and for getting ideas, or for educational purposes (Häggström-Nordin, Tydén, Hanson and Larsson, 2009; Horvath et al, 2013). Peer influence and susceptibility to peer pressure have also been linked to viewing online pornography (Lam and Chan, 2006).

Profile of young people using pornography

The current literature review has not focused in depth on the profile of the children and young people who view pornography in general. However, Livingstone and Smith's (2014) research review reported that sensation seekers and those with low self-esteem were more likely to use pornography, and that sensation-seeking young men took more risks online. A Dutch study also found that male sensation-seeking adolescents were more likely to use sexually explicit internet material and that those with a not exclusively heterosexual orientation used the material more often (Peter and Valkenburg, 2011b).

Livingstone and Smith (2014) reported that relationship status and attachment to friends was not linked to pornography use. However, Peter and Valkenburg (2011b) found that lower life satisfaction was linked with increased use of sexually explicit internet material.

Young people who are frequent users of pornography may represent a distinct group of young people. Svedin et al (2011) compared frequent users of pornography (viewed pornographic material almost every day) to less-frequent users among 2,015 male students aged 18 years. Males in the frequent user group were more likely to be from a single

parent family, live in a larger city, and report significantly less parental care. They were also more likely to report using alcohol and drugs and slightly more of this group scored over the cut off point for a scale measuring mental health (19.5 per cent) compared with less frequent users (12.6 per cent). Frequent users also reported more conduct problems, for example being reprimanded at school. They were more likely to have had sex before the age of 15, had a higher sexual desire and had both sold and bought sex. Sexually coercive behaviour was also more common in the frequent user group (Svedin et al, 2011).

Adolescent and young adults' viewing of legal versus illegal pornography

Many of the studies exploring children and young people's access to pornography do not describe the types of images viewed. It is, therefore, unclear to what extent these images may be developmentally appropriate, concerning or harmful. Pornography can be typically defined as soft-core (containing sexually arousing depictions that are not fully explicit) or hard-core (sexually arousing depictions that are very graphic or explicit), both of which could be classed as 'mainstream' pornography and are legal. Illegal pornography includes IIOC and any other 'extreme pornographic images' listed under Section 63 of the Criminal Justice and Immigration Act (Criminal Justice and Immigration Act 2008, 2008). This includes the portrayal of: an act that threatens a person's life; an act that results, or is likely to result, in serious injury to a person's anus, breasts or genitals; an act that involves sexual interference with a human corpse; or a person performing an act of intercourse or oral sex with an animal (whether dead or alive).

However, a small number of studies have explored the prevalence of violence and coercion in widely available, legal and popular ('mainstream') pornography. Their findings suggest that some form of physical violence (including gagging and spanking) is prevalent towards women within 33 per cent of popular online pornographic videos on the most popular internet pornography sites (Klaassen and Peter, 2015) and in 88 per cent of scenes within the most popular physically purchased or rented pornographic videos (Bridges et al, 2010). Additionally, coerced sex was found to be prevalent in 6.2 per cent of online videos (Klaassen and Peter, 2015). These findings highlight a blurring of the boundaries in the classification of violence within pornography as legal or illegal, and suggest that children and young people exposed to online pornography will have at least a one in three chance of viewing violent pornography. Pornography depicting illegal sexual acts, including bestiality, rape, and paedophilic acts was not found in any of the mainstream pornographic scenes or videos explored within these two studies, nor were 'extreme' levels of violence (for example, torture or use of a weapon). It is

unlikely, therefore, that children and young people using mainstream pornography sites/videos only will be exposed to this level of extreme pornographic material without looking elsewhere for it or being sent it. However, Bridges et al (2010) found that six of the 50 pornographic videos they explored had titles suggesting that the female performers were young or underage. Children and young peoples' exposure to 'legal' portrayals of adult men having sex with underage girls within mainstream pornography is, therefore, more likely.

Studies have suggested that a significant proportion of young people have seen so-called 'soft porn', while exposure to extreme and illegal pornography (such as paraphilia, sexual violence or IIOC) occurs less often (Häggström-Nordin et al, 2009; Horvath et al, 2013). In the study by Häggström-Nordin et al (2009), for example, 58 per cent of the 718 Swedish young people (aged 17–21) surveyed had looked at 'soft porn', heterosexual mainstream pornography and erotica, 31 per cent at 'hard core' pornography (of which 26 per cent were female and 74 per cent were male), and 3 per cent had viewed violent pornography. It is unclear, however, how these categories of pornography were defined in this study. In a more recent Italian study by Romito and Beltramini (2015), 44.5 per cent of the males in their sample and 20.4 per cent of females (aged 18 years) watched non-violent or degrading pornography, while 44.5 per cent of male students and 18.8 per cent of female students reported watching violent/degrading pornography (including rape, torture, violent sex, gang-rape, killing, sex with children, and men urinating or ejaculating on women's faces). Of those in the sample who had been exposed to pornography, 50 per cent of males and 48 per cent of females watched violent/degrading sexual material. This highlights likely definitional influences in the reported prevalence rates regarding exposure to 'extreme' pornography, as well as possible cultural and age differences.

There is some suggestion of progression in the type of images viewed over time and a link between frequent viewing and access to more troubling images. In a Swedish survey of 2,015 male students aged 18 years, almost all (97 per cent) had viewed heterosexual pornography but less than one third of the frequent users (n=200; defined as viewing pornography on an almost daily basis) watched pornography that depicted violent sex, sex with animals or IIOC (Svedin, Akerman and Priebe, 2011). In total, 17 per cent of frequent users viewed IIOC compared with 3.1 per cent of the comparison group, 30 per cent watched sex with animals and 29.5 per cent watched violent sex compared with 10.2 per cent and 10.8 per cent of the comparison group respectively. In a UK survey of 18–24-year-olds, 4 per cent reported using internet pornography for ten hours or more a week, and heavy internet users reported being more worried about the type of images they were looking at than lower frequency users (Wood,

2013). The author suggests users may be drawn to looking at more troubling images through uncontrolled or compulsive internet use.

Exposure to IIOC

Viewing IIOC may be part of young people's sexual development, particularly if the images are developmentally appropriate, albeit illegal (for example, looking at a sexual image of a peer). For others, however, the age gap between them and the children in the images may be wide and viewing IIOC may become sexually problematic or lead to sexually deviant behaviour (Gillespie, 2008). As such, it can be difficult to know how to conceptualise the viewing of IIOC by children and young people (Seto, 2009).

There is little research or discussion of the age-appropriateness of viewing IIOC by children and young people and the way in which this links to their sexual development. However, a small number of studies report on the prevalence of adolescents and young adults viewing child abuse images, which gives an idea as to the scale of this behaviour. It must be noted, however, that the prevalence of this behaviour among children and younger adolescents remains largely unknown. Additionally, analyses of IIOC by COPINE, Interpol, IWF and CEOP indicate that the large majority of IIOC depict children under the age of 10–12 (see, for example, Quayle and Taylor, 2004; IWF, 2015; Quayle and Jones, 2011), particularly when the victim is male (Quayle and Jones, 2011). It can, therefore, be assumed that the age gap between the viewers of IIOC in these studies and the children in the images they view is often large and not developmentally appropriate. These studies have also relied heavily on student populations, which report higher prevalence rates of viewing IIOC than the one representative survey identified by Seto et al (2015).

In a survey of 2,880 Croatian children and young people aged 10–16, around 4 per cent reported receiving images containing violence in addition to nudity and sexual activity, and 1 per cent received sexual images involving children (Flander et al, 2009). However, these images may have been unintentionally viewed rather than sought out as intention to view was not specified. Seto et al's (2015) representative sample of 17–20-year-old males found that 4 per cent had ever viewed child pornography, and a survey of 18–20-year-old students in Norway found that 17.3 per cent of males and 2.5 per cent of females reported having watched child pornography (Hegna et al, 2004). Finally, Sabina et al (2008) found that 17.9 per cent of the males and 10.2 per cent of the females in their survey reported viewing pornography prior to the age of 18 that depicted rape/sexual violence, sexual pictures of children (15.1 per cent and 8.9 per cent males and females respectively) and bestiality (31.8 per cent males and 17.7 per cent females). While the mean number of times young females reported viewing these images was under 1, young males

viewed violent pornography and bestiality on average 1.1 and 1.6 times, suggesting that some young males will view this material more than once.

The reasons known about why adolescents and young adults access IIOC will be discussed in Part 1b of this review, alongside the research findings for adults.

The influence of pornography on children and young people

Studies exploring the impact of pornography report emotional, attitudinal and behavioural implications for children, adolescents and young adults. It is unclear what types of pornography the respondents have been exposed to in these studies, but this is likely to include those who have seen legal as well as illegal pornography.

An EU survey of 9–16-year-olds found that one in three young people were bothered by the sexual image they had seen online and one in six were upset by it (Haddon, Livingstone and EU Kids Online network, 2012). Additionally, 12 per cent of boys and 18.7 per cent of girls taking part in a US survey of college students said that viewing pornography before they were 18 years old had a strong effect on their emotions (Sabina et al, 2008). Of these, over two-thirds reported shock or surprise and around half of boys and a third of girls felt guilt or shame based on what they had seen. Frequent pornography use can also increase children and young people's uncertainty about their sexual beliefs and values (Kjellgren et al, 2011), with females being more likely to report this than males (Häggström-Nordin et al, 2009). However, there appears to be desensitisation to the impact of pornography on young people with repeated viewing. Martellozzo et al (2016), for example, found a large difference in the amount of shock and confusion reported by young people at first viewing of online pornography compared with current/subsequent viewing. At the same time, young people's sexual stimulation from pornography increased.

There is evidence that viewing pornography influences the young person's/young adult's sexual behaviours and attitudes. In Häggström-Nordin et al's (2005) Swedish survey of 17–21-year-olds, almost a third (29 per cent) felt that viewing pornography influenced their behaviour, particularly among frequent viewers. Compared with young people watching pornography a few times a month or less, those watching it every day or every week reported higher sexual arousal, fantasising about doing things and trying to realise things they had seen in the pornography. A series of reviews also found that regular and frequent exposure to sexual content in mainstream media produces greater sexual knowledge and more liberal sexual attitudes among children and young people (Flood, 2009). For example, five studies of Swedish young people found that young men who are

regular consumers of pornography are more likely to have had anal intercourse with a girl and to have tried to perform acts they have seen in pornography (Flood, 2009). They also found that girls who have seen pornography are more likely to have anal intercourse. Nevertheless, it is unclear whether their pornography use may have shaped their sexual interests and behaviours, or whether their use of pornography and participation in anal sex reflect a sexually adventurist or experimental orientation (Flood, 2009).

In addition to the impact of viewing pornography on young people's general sexual behaviour and sexual risk taking, there is also evidence that viewing extreme pornography may be associated with sexually deviant/coercive behaviour. This is discussed in more detail in part 3 of this review. It must be noted, however, that not all studies report a relationship between young people intentionally watching sexually explicit material and their sexually risky behaviour (Peter and Valkenburg, 2011a). Additionally, it may be young people with certain characteristics who view different types of pornography and are consequently influenced by this. Malamuth and Huppin's (2005) review of pornography exposure and sexual aggression, for example, reports that adolescent males with high risk characteristics, such as hostility towards women, were more likely to be exposed to sexually violent pornography, be sexually aroused by it and have their attitudes changed by it (such as viewing violence towards women as acceptable). The relationship between children and young people's viewing of pornography and their emotions, behaviours and attitudes is, therefore, likely to be complex and further research is needed to understand this in more detail.

Young people can be unaware of the implications of viewing IIOC. Gillespie (2008) argues that legislation currently focuses on the type of image viewed and not the age of the person viewing it or their motivation for viewing the image. Viewing IIOC can have other implications too. Seeing such images on the internet can normalise the behaviours viewed and desensitise young people to it (Neustatter, 2007; Prichard et al, 2013). This can be used by abusers as a way of getting young people to produce images themselves.

Sexting: blurring the boundaries between self-generated images and IIOC

The NSPCC defines 'sexting' as "the exchange of self-generated sexually explicit images, through mobile picture messages or webcams over the internet" (NSPCC, 2016). It can also refer to written messages that are sexual in nature. While these images and messages may go no further than the intended recipient, the sender has no control over an image once sent and it may end up in the public domain. CEOP estimate that a fifth of IIOC are self-generated

by their subject and that most were freely produced by the young person as part of developmentally appropriate behaviour, rather than through coercion or exploitation by an adult (CEOP, 2013b). However, sexting can create a blurred distinction between private photographs taken consensually and IIOC, and it can be difficult to tell the difference between coerced and non-coerced pictures (Horvath et al, 2013).

In the second US youth internet study of high school children aged 10–17-years-old, 4 per cent of all young people using the internet had received a request for a sexual picture over the last year (Mitchell, Finkelhor and Wolak, 2007). However, the majority of these requests came from an adult (68 per cent) but 24 per cent were by someone the young person thought was peer-aged or younger (in 6 per cent of cases the perpetrator's age was unknown). Only one young person out of the 65 young people asked actually sent the requested picture. However, Martellozzo et al (2016) found that 54.9 per cent of the 74 (13 per cent of the total sample) children and young people in their study who had taken topless or fully naked pictures of themselves shared this picture with someone – 30.6 per cent of these were with someone they did not know.

Young people involved in consensual sexting may not realise that they are at risk of prosecution for the production or distribution of IIOC. Albury et al (2013) argues that legislation has not been updated to cover consensual sexting, putting young people at risk of being criminalised. However, there is also evidence that some young people are aware of the risks of sexting but still continue with the behaviour. For example, a US study of high school students found that over a third sexted despite believing there could be serious legal consequences (Strassberg et al, 2013).

Limitations of the literature on sexting

There is a wide range of literature available on young people's involvement in sexting, including a systematic review on the prevalence of, and risk and protective factors for, sexting (Klettke et al, 2014). However, there are limitations to these studies and it is difficult to compare their findings due to methodological differences. For example, the definition of sexting varies, whereby some studies will include semi-naked images while others will include naked images only. The age range of young people surveyed about their experience of sexting also varies, as does the nature of the samples used. In the systematic review by Klettke et al (2014), studies that used representative samples reported lower prevalence rates for sexting than those that did not. The places in which the survey was administered could also affect the honesty of respondents and thus the prevalence

rates found (Strassberg et al, 2013). These factors have led to wide variation in sexting prevalence rates.

Prevalence rates for sexting and the characteristics of those who sext

Strassberg et al (2013) suggest that sexting is not a rare behaviour. However, it is generally only carried out by a minority of young people (Lenhart, 2009). Across six studies reviewed by Klettke et al (2014), the average prevalence rate for adolescents sending a sexually suggestive text or photo content was 10 per cent. Looking specifically at sending a sext with a photo in three of these studies, the average prevalence rate was 12 per cent. This is in line with a more recent UK survey into sexting whereby 13 per cent of young people aged 11–16 reported ever having sent a topless or fully naked photo of themselves (Martellozzo et al, 2016). The average prevalence rate for receiving a sext (photo and/ or text) was 16 per cent across the five studies which measured this (12 per cent for receiving sexts with photo content only).

Children and young people with certain characteristics may be more or less likely to sext than others. The systematic reviews found that sexting was higher among older age groups of young people (Klettke et al, 2014), as has also been found in a range of other studies (Rice et al, 2014; Strassberg et al, 2013; Yeung et al, 2014). While there were no reported gender differences for sexting (Klettke et al, 2014), Rice et al (2014) found that sexting was higher among males and Temple et al (2012) suggested that girls are more likely to be asked for a sext.

The systematic review also found that sexting was higher among white young people (Klettke et al, 2014). However, some studies report a higher rate of sexting among young people of minority ethnicity (Rice et al, 2014; Yeung et al, 2014), while others note differences between minority ethnic groups (Fleschler Peskin et al, 2013). Sexuality may also play a role as Rice et al (2014) found higher rates among lesbian, gay, bisexual and transgender (LGBT) young people.

Yeung et al (2014) found that young people who were not living in two-parent families were more likely to sext. Research has also found a link between emotional problems and sexting (Dake et al, 2012; Yeung et al, 2014) and being victimised and sexting, with those experiencing violence or abuse in their relationships being twice as likely to sext (Safeguarding teenage intimate relationships [STIR], 2015). Other factors include experiential thinking and sensation seeking, whereby Van Ouytsel et al (2014b) found young people higher in these traits to be more likely to sext.

Finally, the rate of sexting has been found to be higher among young people who spent more time on their phone and texting (Dake et al, 2012; Lenhart, 2009; Rice et al, 2014; Yeung et al, 2014), and among those who paid their mobile phone bill themselves (Lenhart, 2009).

Reasons for sexting

A number of reasons have been cited as to why young people sext. For some, sexting can be a way of initiating a romantic relationship or deemed part of a normal romantic relationship (Henderson, 2011; Korenis and Billick, 2014; Lenhart, 2009; Mitchell et al, 2012). A survey of 14–17-year-olds across five EU countries (Safeguarding teenage intimate relationships [STIR], 2015) found that 43 per cent of UK females sexted as a way of showing relationship commitment, and that sexting was often reciprocal, with two-thirds of those sending a sext also receiving one. Other reasons for sexting are for fun (Klettke et al, 2014), for a joke (Korenis and Billick, 2014; Mascheroni and Olafsson, 2014; Safeguarding teenage intimate relationships [STIR], 2015), or getting attention from peers or being flirtatious (Henderson, 2011; Klettke et al, 2014; Safeguarding teenage intimate relationships [STIR], 2015). It can also be a form of sexual experimentation or exploration (Mascheroni and Olafsson, 2014; Yeung et al, 2014), and for some, sexting can be an alternative to sex or seen as less risky than sex (Lenhart, 2009; Yeung et al, 2014).

However, there is also evidence that girls can feel pressure to sext (Henderson, 2011; Klettke et al, 2014; Phippen, UK Safer Internet Centre and NSPCC, 2012; Ringrose et al, 2012); 27 per cent of UK females felt pressure to sext from their partner (Safeguarding teenage intimate relationships [STIR], 2015). Two thirds of the young people responding to a survey on the UK 'ChildLine' website (a helpline counselling service for children and young people) who had sent a sext (n=119) stated this was because they felt forced to send the images (Hamilton-Giachritsis et al, 2016). The extent of sexting can normalise the behaviour (Safeguarding teenage intimate relationships [STIR], 2015) and so increase the expectation to sext (Rice et al, 2012).

Research has shown that the more pressure young people get, the more likely they are to sext (Walrave et al, 2014) and that young people are likely to sext if they know someone else who sexts (Rice et al, 2012). Some young people can also be blackmailed into sexting or face the horror that the image they shared has been circulated to others (Safeguarding teenage intimate relationships [STIR], 2015). The systematic review by Klettke et al (2014) found that 17 per cent of young people who received a sext had shared it with someone else, and 55 per cent of these had shared it with more than one person. This may put young people at risk of being prosecuted for the production or distribution of IIOC. One in seven young people who

sent a sext reported negative feelings about it (Strassberg et al, 2013), with girls often feeling more upset than boys (Ringrose et al, 2012; Safeguarding teenage intimate relationships [STIR], 2015). This may be because girls can be viewed negatively if they sext, whereas it is seen as a joke if boys do it (Albury et al, 2013; Ringrose et al, 2012).

Taken together, the above findings suggest that there may be 'positive/healthy' circumstances in which young people sext, as well as in negative and abusive situations. Wolak and Finkelhor (2011) created two typologies of sexting based on 550 sexting cases reported to law enforcement agencies in 2008 and 2009: aggravated versus experimental sexting. Under the experimental category, sexting appeared to stem from typical adolescent impulses to flirt, find a partner, etc. Under the abusive category, however, sexting either had illegal adult involvement (for example, the solicitation of minors to produce IIOC), or involved criminal or abusive behaviour from another young person (such as extortion, photographing sexually abusive acts, or creating or sending an image against the other young person's will). While some of these abusive acts may not typically be classed as sexting (for example, photographing sexually abusive acts, which may be more likely to be classed as sexual abuse), it demonstrates the range of behaviours grouped under the term 'sexting' and the diverse circumstances under which it can occur.

Links between sexting and other risky behaviour

The potential seriousness of young people's sexting behaviour will vary. For some young people, sexting can be part of age-related boundary-pushing or sexual experimentation (Horvath et al, 2013). This may form part of healthy sexual development and will not always be associated with other risky behaviour (Levine, 2013; Doring, 2014). For others, sexting can be more serious and linked with other problematic behaviour. Van Ouytsel et al (2014a) found an association between sexting and pornography use for both male and female adolescents.

The systematic review on sexting found that young people who sexted were more likely to be sexually active (Klettke et al, 2014), yet there were mixed findings on the links between sexting and other behaviours. For example, some studies found a link between sexting and other sexually risky behaviour, such as having unprotected sex or casual sex (Henderson, 2011; Yeung et al, 2014), but this was not found in other studies. Similarly, the systematic review found mixed results on the link between sexting and substance misuse (Klettke et al, 2014), whereby some studies reported a link between sexting and drug and alcohol use (Mitchell et al, 2012; Yeung et al, 2014) while others did not.

Part 1a section summary

- Between a fifth to a half of all children and young people under the age of 16 have been exposed to online pornography. While this may have been accidental for some, others intentionally seek out this material; particularly males and older young people.
- It is unclear exactly the type and content of the pornography young people are exposed to online. However, preliminary research findings suggest that a significant minority of young people access illegal, extreme pornographic content including violence, bestiality and IIOC. The likelihood of this appears to increase with the frequency of pornography use.
- Viewing pornography has been found to have a range of emotional, attitudinal and behavioural implications for the young person, with the impact increasing with the frequency of exposure.
- There has been no attempt to look at the characteristics and age range of the subjects of the IIOC viewed by young people and it is, therefore, not possible to understand the developmental appropriateness of this behaviour.
- Some of the IIOC viewed by young people may have been self-generated as a part of 'sexting' behaviour. This appears to be prevalent among around 10 per cent of young people and may be 'developmentally appropriate', albeit illegal, behaviour, which is a significant contributor to the pool of IIOC in circulation.
- Research suggests that sexting behaviour is more common among older young people who spend more time texting and on their phones, and is possibly higher among those with emotional problems. Those who do sext are more likely to be sexually active and may be more likely to be involved in sexually risky behaviours. Sexting may occur in experimental or abusive circumstances.

Part 1b: Why do children and young people access IIOC and how does this compare to the motivations of adult offenders?

A small number of studies have attempted to explore young peoples' motivations for viewing IIOC and the way in which they are used by young people. While further work is greatly needed in this area, the limited findings help to provide some level of context to this behaviour. The findings from this research are also compared with the findings from research with adult offenders to look for any parallels in this behaviour. Note that no studies were identified for this review that explored the motivations of children and young people viewing violent pornography or images of bestiality.

Young people's motivations for accessing IIOC

Accidental viewing, curiosity and deviant sexual interest

Not all young people will access IIOC intentionally, in the same way that mainstream pornography viewing can be accidental or intentional. Among adult offenders, Beech et al (2008) notes that the use of IIOC can begin out of curiosity, without a pre-existing attraction to children, and so coming across pornography and IIOC accidentally could be a risk factor for further use. This may link to the research on frequent internet use outlined above in relation to young people, and how this may lead to the seeking out of more extreme images over time. Indeed, Seto et al (2015) found in their survey of 17–20-year-old males that viewing any type of pornography and viewing violent pornography was also associated with viewing IIOC. For some, it may be that the decision to view IIOC is made while already in a sexually aroused state, as sexual arousal is associated with increased risk-taking behaviour and lower perceptions of negative consequences (Taylor and Quayle, 2008). For others, IIOC may be sought out specifically for sexual purposes, which may or may not link to a specific sexual interest in children and/or general sexual deviancy.

In a study of seven young people (aged between 13–16 years upon referral to an HSB service in the UK) known to have viewed IIOC (Moultrie, 2006), around half started off viewing adult pornography before viewing IIOC. While five of the seven young people disclosed feeling sexually aroused by children in the community, they stated that this was not the case prior to their viewing of IIOC. For these young people then, it does not appear to be a sexual attraction to children that prompted their viewing of IIOC, but that this was a

secondary outcome from doing so. However, the authors suggest that the viewing of adult pornography prior to IIOC was not prolonged and, therefore, habituation to this material is unlikely to have caused a transition to IIOC.

A representative school-based survey of 1,978 Swedish men aged 17–20 years looked at the correlates of viewing IIOC (Seto et al, 2015). They found that a self-reported interest in sex with children was strongly associated with viewing child pornography, as was frequent sexual lust and ever having had sex with a male. These findings, coupled with those from Moultrie (2006), may reveal differences in the motivations of young people's and young adults' access to IIOC depending on age; younger adolescents may be more likely to start off viewing IIOC out of curiosity or as part of a pattern of increasing pornography use, while older adolescents and young adults may have a greater sexual motivation for doing so. It could also be that these older adolescents have been viewing IIOC for some time and that their sexual interest has developed as a result of this instead of it being a precursor. A third study by Stevens et al (2013) found that two of the six IIOC offenders in their sample (average age 16 years) had deviant sexual fantasies at the time of the internet offence. As IIOC are likely to be viewed more than once, however, it is unclear whether these sexual fantasies drove the young person to view the material initially or whether they developed as a result of the behaviour.

Peer-to-peer networks, which enable users to exchange files on their computers without going through a server, are a common way in which IIOC are shared with others. 'IsoHunt' is one of the most popular peer-to-peer networks, whereby 27 per cent of the users are thought to be aged 18–24 and 15 per cent under 18 (Prichard et al, 2013). A proportion of the site's most popular and persistent search terms relate to sexual content including different types of pornography, child pornography and bestiality (Prichard et al, 2011). While it is unclear what proportion of children and young people may have searched for this type of content, their presence on the site suggests that they are likely to be involved in this to an extent. The most popular 300 search terms are displayed on the site (Prichard et al, 2011) and given that some of the search terms for IIOC are ambiguous, children/young people may click on them and be exposed to this content accidentally. Others, particularly adolescent boys, may be interested in viewing pornography depicting young people their own age, and their search may inadvertently include those who are younger than them. A third group, however, may know the search terms likely to produce IIOC material and intentionally search for this (Prichard et al, 2013). In Moultrie's (2006) study, many of the seven boys found to be in possession of IIOC obtained these images from peer-to-peer networks.

The influence of others on young people's access to IIOC

Young people are vulnerable to peer pressure and this may be associated with their viewing of IIOC in some cases. Moultrie (2006), for example, found that the seven young people in their study were likely to have had discussions with others that encouraged the viewing of IIOC and that many of the IIOC they had were sent to them from people they spoke to in chat rooms. In addition, around half of these young people had used chat rooms to explore their sexual orientation, noting that these conversations increasingly turned to younger adolescents and children. Seto et al (2015) also reported a strong association between viewing child pornography and having peers who thought that viewing child pornography or having sex with children was OK. However, it is not possible to say from this study whether this led to the viewing of IIOC or whether these young people sought out like-minded peers. Seto et al (2015) also found that having been sexually coerced was moderately associated with viewing child pornography, particularly if the young person had been coerced by multiple perpetrators. This may suggest that the attitudes and behaviours of these young people were influenced by the actions of others towards them, although this association is likely to be very complex.

Young people's use of IIOC

Trading IIOC with others

While children and young people may access IIOC out of curiosity and/or for their own sexual purposes, a New Zealand study found that school children detected for using IIOC also traded these images with others (Carr, 2004). They were more likely to trade images of teenagers and older teenagers than other age groups, which may reflect age-appropriate interests among sexually curious adolescents. This is on the basis that these young people were concentrated in semi-rural areas with few other age-appropriate opportunities for sexual exploration. However, just over half of the school children had also traded images of children aged two to seven years, which is concerning (Carr, 2004). Similarly, Aebi et al's (2014) study of 54 young people convicted of possessing IIOC in Switzerland found that 29.6 per cent of these young people had provided others with access to the images. Some of this may be the distribution of sexts that the young person has received and this is where the boundaries between sharing a sext and distributing IIOC become blurred.

Collecting IIOC

Very little research has explored whether young people collect IIOC to the same extent to which adult IIOC offenders have been known to do so (see next section below), and further research is, therefore, needed. However, two studies of young people known to view IIOC have provided some information on this. Compared with the young people in their study who viewed other types of illegal pornography (excluding IIOC), those (aged between 12.4 and 17.9 years old) who downloaded IIOC had downloaded more illegal pictures (between 1 and 400) over a longer time period of between 1 day and 4.6 years (Aebi et al, 2014). For the seven young people in Moultrie's (2006) study, the number of IIOC they were found to be in possession of varied from 15 to "several hundred". The authors note that this is less than expected in adult collectors of IIOC and none had engaged in a process of cataloguing the images as is often seen by adults.

The research also suggests that young people may download IIOC as part of a general interest in extreme pornography. In the study by Aebi et al (2014), for example, 39 per cent of the 54 young people who had downloaded IIOC had also downloaded other types of pornography, including sexual behaviour with animals and brutality, onto a mobile or computer. However, this has not been explored in other studies and the extent of this behaviour is, therefore, unknown.

Adult offenders' motivations for using IIOC

Research asking adult IIOC offenders the reasons for their behaviour has found a range of different explanations:

- Accidental use (Seto et al, 2010; Winder et al, 2015)
- Out of curiosity (Frei et al, 2005; Seto et al, 2010)
- To avoid real life, escape unsatisfactory elements of their life, or to help deal with difficult emotional states (Quayle et al, 2006; Quayle and Taylor, 2002; Surjadi et al, 2010)
- To re-enact and resolve their own childhood trauma from abuse and neglect without any inclination to sexually offend against a child (Griffin-Shelley, 2014)
- To gain sexual gratification because of a sexual interest in children, or to achieve sexual arousal/develop fantasies that lead to sexual arousal (Lanning, 2010; Quayle and Taylor, 2002; Seto et al, 2010)
- To gain sexual relief in order to avoid contact offending (Aslan et al, 2014; Elliott and Beech, 2009; Quayle and Taylor, 2002)
- For self-stimulation prior to committing contact abuse (Merdian et al, 2013)

- To support the idea that adult–child sexual relationships are acceptable (Leary, 2007)
- To groom children, decrease a child's inhibitions and demonstrate to them how to sexually please an offender (Lanning, 2010; Leary, 2007)
- To entrap/blackmail/control victims (Lanning, 2010; Leary, 2007)
- To barter/exchange images on the internet (Leary, 2007)
- To make a profit from the images (Leary, 2007)
- Because of addiction (Winder et al, 2015)

As such, IIOC appear to be used for solitary purposes that may or may not have a direct sexual motive, to facilitate contact sexual abuse, and/or to make a profit. An offender may have more than one motive for accessing IIOC and this may be transitional over time. The material can be reinforcing if it results in masturbation (Quayle et al, 2006) and can lead to the need for newer or more extreme images (Quayle and Taylor, 2002; Wood, 2011).

Similar to the research with young people, research with adult offenders shows that they do not tend to view only IIOC. Seto and Eke (2015), for example, found that of their sample of 286 IIOC offenders, 84 per cent also had adult pornography and 87 per cent had pornography depicting fetish or other paraphilic content (such as bestiality or sadomasochism). This suggests that viewing IIOC for some men may be just one aspect of their deviant sexual interests. However, this issue does not appear to have been explored further in the literature and research that focuses only on the viewing of IIOC may, therefore, be too simplistic.

Frequent internet use and viewing of pornography among adults

In the same way that the literature on young people suggests that frequent viewing of pornography may be linked to the viewing of more extreme sexual images, the research with adults also notes a link between frequent/problematic internet use and access to IIOC.

A comparison of adult pornography users who viewed IIOC versus those who did not found that those using IIOC spent more hours viewing images online per week (Ray et al, 2014). A Swiss study of men arrested for possession of IIOC found that two-thirds of them showed signs of internet addiction (Niveau, 2010), and Lee et al (2012) found that internet offenders had high levels of internet preoccupation. However, the relationship between frequent/problematic internet use may differ according to personality characteristics. In a study by Ray et al (2014), those scoring high on

sensation-seeking had increased risk of viewing IIOC according to the hours spent viewing pornography online. Additionally, Stulhofer et al (2010) found that young males (aged 18–24) who used paraphilic sexually explicit material were using pornography more extensively, with 44 per cent using it three or more hours per week. They were also exposed to pornography more often at the age of 14 than those who viewed mainstream pornography only.

Increased internet use has been linked with decreased interaction with the real world (Quayle and Taylor, 2003). Laulik et al (2007) reported a link between the numbers of hours spent accessing IIOC and interpersonal difficulties and depression among a probation sample of men.

Collecting IIOC

Collecting IIOC can often form an important part of an adult offender's motivations for accessing IIOC online (Beech et al, 2008). Research on a UK probation sample of IIOC offenders found that they spent an average 11.7 hours a week viewing IIOC and that 30 per cent of these offenders collected particular types of images that were categorised and filed on their computers (Laulik et al, 2007). Indeed, Quayle and Taylor (2003) found that the time spent online by internet offenders was associated with an increase in the number of images downloaded and a greater focus on collecting images.

Collecting can be part of a search for new images, a way of socialising with other offenders or a process of being able to exchange images with others (Quayle and Taylor, 2003). Offenders can gain credibility with other offenders through the size of their collection of images or having new or rare material to trade. Collecting images can also lead to an increase in fantasy or sexual activity (Quayle and Taylor, 2003). Those who use peer-to-peer sites for their offending are often more prolific in their downloading habits of IIOC, whereby vast collections of images can be shared or built in hours (CEOP, 2013a).

In a New Zealand study of 106 IIOC offences coming to the attention of the police, the number of images held by these men (aged 14–67 with an average age of 30 and modal age of 17) at the time of investigation ranged from 0 to 55,000 (Carr, 2004). However, the number of images held by adult offenders does appear to differ according to their characteristics and motivations for accessing IIOC (Webster et al, 2012).

Part 1b section summary

- It is unclear why young people access IIOC; there are likely to be a number of reasons, as there are for adult offenders. For some, exposure may be accidental while others may view this material intentionally.
- Intentional viewing of IIOC may be motivated by a sexual interest in children or general sexual deviancy. It is likely that this has developed over time for some individuals, possibly as a result of unintentional initial exposure.
- Peers and others with deviant sexual interests also appear to influence adolescents and young adults' accessing of IIOC, yet it is unclear from the research whether this is a causal relationship.
- Adults also appear to be more likely to view IIOC if they are frequent users of pornography, in the same way that this has been documented for young people.
- While young people do appear to trade IIOC, they do not appear to be as heavily involved in collecting and cataloguing these images in the same way as adults. However, the research literature regarding this is very limited and solid conclusions cannot be formed.

Part 2: The profile and characteristics of children and young people accessing IIOC online.

This section first summarises what is known about the characteristics and profile of young people who have accessed IIOC based on the limited research available. These findings are from four studies that explored the characteristics of young people who had viewed IIOC online, one of which also looked at the characteristics of those viewing other illegal pornography in Sweden (such as that featuring animals, excrement and violence). No research was identified that looked at the characteristics of children under the age of 12 or females with online HSB, young people who sexually offend against or groom others online, nor those who could be classed as dual online and offline offenders.

As a very limited amount of research has been carried out with children and young people, research findings on the profile and characteristics of adult online sexual offenders, as well as adult 'dual' online and contact sexual offenders, are also reviewed. Table 1 summarises the findings from this research and provides a comparison of the profile and characteristics of young people and adults who have accessed IIOC, along with adult dual offenders.

Profile of young people accessing IIOC

Four studies were identified that explored the characteristics of young people who had viewed IIOC online; two from the UK, one from Switzerland and one from Sweden. The two UK-based studies are both based on very small sample sizes. Moultrie (2006) profiled seven young people who had been referred to the Barnardo's Taith project for internet offences over a three-year period (aged 13–16 on referral). The profile of these young people was compared with that of young people referred to the project for contact sexual offences.

More recently, Stevens et al (2013) profiled six adolescent sex offenders (average age = 16 years) who had been referred to a North London treatment centre over a ten-year period, compared with 178 adolescents referred for other sexual offences. Caution should be taken in generalising the findings from these two studies based on their small sample sizes.

The Swedish and Swiss studies used larger sample sizes. Aebi et al (2014) looked at the profile of 54 adolescents (aged 12.4 to 17.9 years) who had been convicted of possessing IIOC in Switzerland. They compared these young people to those convicted of contact sexual offending against a child and those in possession of other illegal pornography. Seto et al (2015) surveyed a representative sample of 1,978 Swedish males, aged 17–20 years, to assess the prevalence of viewing IIOC and associated factors among this sample.

Table 1: Comparison of the characteristics and reoffending behaviour of young people who view IIOC, adult online sexual offenders and adult dual sexual offenders

Characteristics of young people apprehended for viewing IIOC		**Evidence base for young people**	**Characteristics of adult online sexual offenders[a]**	**Similarity between young and adult offenders**	**Characteristics of adult dual online and offline sexual offenders[b]**
Demographic characteristics *(compared with contact offenders)*	1. Older than contact offenders	Stevens et al, 2013; Aebi et al, 2014	Tend to be younger than contact offenders	No	
	2. More likely living with one or both of their birth parents	Aebi et al, 2014; Moultrie, 2006; Stevens et al, 2013			
	3. Less likely from a lower socioeconomic status group	Aebi et al, 2014	Greater income	Yes	
	4. Average/above average intelligence and do well academically	Moultrie, 2006	Tend to have good education levels and less likely to have been expelled/ suspended from school	Yes	
	5. More likely in employment/ education	Stevens et al, 2013	Likely to be in employment, often in qualified jobs or positions of authority	Yes	Less likely to be in employment compared with online-only offenders
	6. Less likely childhood abuse or on the child protection register	Moultrie, 2006; Stevens et al, 2013	Fewer childhood difficulties and less likely physical abuse and neglect than contact offenders, but higher than in the general population	Yes	More childhood difficulties than online-only offenders but same as contact-only offenders
	7. Few ADHD/other behavioural problems	Moultrie, 2006			
	Additional information on adult offenders		*Predominantly white males, tend to be single, less likely to have had a live-in relationship than contact offenders*		*More likely to be white and more likely to live with children/have access to children than online-only offenders, but less than contact-only offenders*

Characteristics of young people apprehended for viewing IIOC		Evidence base for young people	Characteristics of adult online sexual offenders[a]	Similarity between young and adult offenders	Characteristics of adult dual online and offline sexual offenders[b]
Sexuality	8. Large proportion questioning sexual orientation/gay	Moultrie, 2006			More likely to be homosexual or bisexual than online-only offenders
	9. Around a third with sexual arousal towards young people	Moultrie, 2006	Around half to two-thirds report masturbating to IIOC	Yes	
	10. Self-reported sexual interest in children strongly correlated with viewing IIOC	Seto et al, 2015	Those who masturbated to IIOC had a higher sexual interest in children. More likely to have paraphilic sexual interests than contact offenders	Yes	Greater sexual interest in children compared with online or contact-only offenders
	Additional information on adult offenders		*Higher levels of sexual deviancy, sexual preoccupation and sexual compulsivity than contact offenders*		*More sexual regulation problems compared with contact-only offenders. Possibly more sexual preoccupation compared with online-only offenders*
Psychological and social issues	11. Around a third with low self-esteem compared with around 1 in 4 contact offenders	Moultrie, 2006	No differences found in meta-analysis compared with contact offenders	No	
	12. Over half with emotional problems compared with 1 in 3 contact offenders	Moultrie, 2006			
	13. Do not fit in with peer group/ friendship difficulties	Moultrie, 2006; Stevens et al, 2013	Lower levels of interpersonal functioning and potentially higher social phobia than contact offenders	Yes	

Characteristics of young people apprehended for viewing IIOC		Evidence base for young people	Characteristics of adult online sexual offenders[a]	Similarity between young and adult offenders	Characteristics of adult dual online and offline sexual offenders[b]
Psychological and social issues (cont.)	*Additional information on adult offenders*		*Compared with contact offenders: No reported differences in loneliness or psychological profiles although findings are not consistent.* *Less assertive, possible difficulties with mood regulation, lower levels of socially desirable reporting and impression management. Greater self-control, less impulsivity and lower external locus of control. Less likely to have a history of substance misuse*		*Potentially more likely to have substance misuse problems, greater self-management deficits, more empathy deficits, lower scores on impression management and less likely to join a paedophilic online network than online-only offenders*
Offence supportive attitudes	14. Just under 1 in 3 with elevated cognitive distortions compared with 1 in 4 of contact offenders	Moultrie, 2006	Found to have cognitive distortions, especially when assessed with internet-specific assessment, yet these were lower in meta-analysis based on studies using general measures.	Unclear	Fewer cognitive distortions about children compared with contact offenders
	15. Attitudes and beliefs about child–adult sex and rape and sexual assault positively correlated with viewing IIOC	Seto et al, 2015	May be more likely to view children as sexual objects than contact offenders	Unclear	
	Additional information on adult offenders		*More victim empathy, lower emotional congruence with children than contact offenders*		

Characteristics of young people apprehended for viewing IIOC		Evidence base for young people	Characteristics of adult online sexual offenders[a]	Similarity between young and adult offenders	Characteristics of adult dual online and offline sexual offenders[b]
Offending behaviour	16. Fewer previous convictions compared with contact offenders and those downloading other types of illegal pornography. – However, theft, burglary and violent conflict with teacher correlated with viewing IIOC when explored in representative population sample	Aebi et al, 2014; Moultrie, 2006; Stevens et al, 2013 Seto et al, 2015	Few previous convictions. Less physical aggression and anti-social behaviour than contact offenders	Yes	More likely to have previous convictions and fewer barriers to breaking the law than online-only offenders
	17. Low sexual and general reoffending rate and lower than contact offenders	Stevens et al, 2013; Aebi et al, 2014	Low sexual and general reoffending rate and lower than contact or dual offenders	Yes	Higher sexual reoffending rate than online-only offenders
	18. Small proportion of cross-over with contact sexual offending. – However, there is potentially a range of other sexual behaviours displayed alongside viewing IIOC	Stevens et al, 2013; Aebi et al, 2014 Moultrie, 2006	Small proportion of cross-over with contact sexual offending; around 1 in 8 or 1 in 6 with a previous history or concurrent contact sexual offences, respectively	Yes	
	Additional information on adult offenders		*Reoffending tends to match the index offence. Most consistent risk factors for reoffending among online offenders: previous contact offence and general criminal history.* *Most consistent risk factors for contact sexual offending among online offenders: prior non-sexual offending, anti-sociality, high levels of paedophilia, few psychological barriers to acting on deviant sexual interests. Possibly also younger victims in images and more extreme images.*		

[a] These summaries are based on the majority of research findings and some contradictory evidence exists.

[b] The research base with adult dual offenders is small and does not exist among young people.

Limitations of the literature

The findings from these studies must be viewed with their limitations in mind. With the exception of Seto et al (2015), the studies use convenience samples of young people known to view IIOC and do not represent those who have avoided detection (Fortin and Corriveau, 2015; Henshaw et al, 2015). There are also definitional differences in the viewing of IIOC across studies: Aebi et al (2014) and Moultrie's (2006) sample have been in possession of and/or distributed IIOC, while Stevens et al's (2013) sample had 'used internet child pornography' and Seto et al (2015) asked participants about viewing adult–child sex. Additionally, some young people in Moultrie's (2006) study had committed known contact sexual offences while those viewing IIOC in Stevens et al (2013) and Aebi et al's (2014) studies had not. It is unknown whether those in Seto et al's (2015) study had ever sexually abused a child offline. The comparison groups of 'contact' sexual offenders also included those who had accessed IIOC in the study by Aebi et al (2014) and may also have done so in Stevens et al (2013) and Moultrie's (2006) studies.

It is also likely that the IIOC group and contact offender groups in these studies will include offenders who have committed undetected contact and/or IIOC offences based on hidden rates of sexual offending (Henshaw et al, 2015). The definitional differences across the studies may influence the findings from these studies. Nevertheless, they are important in helping to inform an understanding of young people with online HSB.

Demographic and personal circumstances of young people viewing IIOC

All four studies focused on males only and the age range of included young people viewing IIOC was 12.4 to 20 years old. It seems likely that a greater number of adolescents and young adults will view IIOC online compared with younger adolescents and children, given their greater freedom and likely lower supervision online. However, the lack of research exploring the viewing of IIOC across a large representative sample of children, adolescents and young adults means there is no evidence to support this. Nevertheless, Stevens et al (2013) and Aebi et al (2014) did find young people viewing IIOC and other forms of illegal pornography to be, on average, two years older (average age = 16.4 years and 15.3 years respectively) than juvenile contact offenders against children (average age = 14.3 years and 13.1 years respectively).

Across three studies, young people viewing IIOC were more likely to be living with one or both of their biological parents (Aebi et al, 2014; Moultrie, 2006; Stevens et al, 2013) and less likely to be living in local authority care (Stevens et al, 2013) than contact offenders. These young people were less likely to disclose physical or sexual abuse (Moultrie, 2006; Stevens et al, 2013) and Moultrie (2006) found that none of the young people in their sample had been on a child protection register during childhood. Few also had ADHD or other behavioural problems (Moultrie, 2006). These IIOC offenders, therefore, appear to have relatively stable backgrounds compared with contact offenders.

IIOC offenders were also significantly less likely to be from a lower socioeconomic group than contact offenders (Aebi et al, 2004). In terms of education, they were more likely to be of average or above average intelligence, doing well academically (Moultrie, 2006), and to be in education or employment (Stevens et al, 2013).

Sexuality and sexual deviancy

Moultrie (2006) found that four out of the seven young people studied who were involved in internet offending either questioned their sexual orientation or described themselves as gay. During work, five of the seven young people discussed their sexual arousal to young people in the community, but stated that they were not aroused prior to accessing images (Moultrie, 2006). Seto et al (2015) also found that a self-reported interest in sex with children was strongly associated with viewing IIOC among the young adults in their study, but that having frequent sexual partners was not.

Self-esteem and emotional issues

Two out of the seven IIOC offenders referred to the service in Moultrie's (2006) study had low self-esteem, compared with a quarter of the larger sample of young contact offenders. Additionally, just over half (four out of seven) had emotional isolation problems compared with a third of the larger sample of contact offenders. Nevertheless, these factors were only explored in one study.

Social functioning

Many IIOC offenders felt that they did not fit in with their peer group (Moultrie, 2006) and had high rates of friendship difficulties (Stevens et al, 2013). However, internet offenders had comparable rates of being bullied to other types of juveniles involved in sexual offences (Stevens et al, 2013).

Offence supportive attitudes and beliefs

In Moultrie's (2006) study, two out of the seven young people had elevated cognitive distortions compared with a quarter of the larger sample of contact offenders. In the study by Seto et al (2015), scores on the child sex liberalism scale, assessing attitudes and beliefs about child–adult sex, had high associations with viewing IIOC, but the child seduction scale assessing attitudes and beliefs about children's ability to initiate or consent to sex did not. Additionally, scores on the rape myth scale assessing attitudes and beliefs about rape and sexual assault had a strong relationship with viewing IIOC.

Offending history of young people using IIOC

Young people involved in viewing IIOC had significantly fewer previous convictions, including violent previous convictions, compared with juvenile contact offenders against children (Aebi et al, 2014, Moultrie, 2006; Stevens et al, 2013) and young people downloading other types of illegal pornography (Aebi et al, 2014). However, Seto et al (2015) found that ever having committed theft, burglary or getting into violent conflict with a teacher was associated with viewing IIOC in their representative population survey. This may suggest that prior offending among young people viewing IIOC is lower than contact offenders against children, but higher than the general population of young people who do not view IIOC. Further research is needed to support this.

Seto et al (2015) found that substance abuse was not associated with viewing IIOC, but no other studies explored this relationship.

Summary of the profile and characteristics of young people who view IIOC

- From the limited research carried out in this area, young people who view IIOC appear to be older than contact sexual offenders, to have had relatively stable backgrounds with less experiences of childhood abuse, and to perform better academically.
- There is some evidence that they may have a greater sexual interest in children than contact sexual offenders and have difficulty with their friendships and social functioning. There is also some evidence that they have cognitive distortions linked to their viewing of IIOC.
- Young people who view IIOC appear to have less of a history of delinquency and violence than contact sexual offenders against children.

Characteristics of adults using IIOC

In the absence of literature on young people involved in online offending, research on the characteristics of adult online offenders has been reviewed. This includes a meta-analysis of 27 studies looking at the difference between online (all studies included IIOC offenders and around half also included 'child luring' offenders) and offline sexual offenders (Babchishin et al, 2011), and a more recent meta-analysis of 30 studies looking at differences between IIOC-only offenders, contact offenders, and dual online and offline offenders (Babchishin et al, 2014). When reviewing the research findings in this section, the term 'online offenders' is used to discuss adults who have displayed any form of sexual offending online, unless the type of online offending (for example, accessing IIOC) has been clearly specified in the research. It is unclear, however, how much the findings from these and other studies on adult offenders apply to young people.

Demographic and personal circumstances

The majority of studies have demonstrated differences in the age and demographic characteristics of online and offline offenders, although a small number of studies have not found this to be the case (for example, McCarthy, 2010; Reijnen et al, 2009).

As with sexual offending in general, adult online sexual offenders are predominantly male (Alexy et al, 2005; Burgess et al, 2008; Fortin and Corriveau, 2015; Henshaw et al, 2015; Quayle et al, 2008) and the low number of females known to view IIOC means that there is very little literature about them. However, an online survey of self-reported IIOC users found that 5.5 per cent of respondents were female (Seigfried-Spellar and Rogers, 2010). Where females are involved in using IIOC, it is often in conjunction with a male offender (Fortin and Corriveau, 2015; Huang et al, 2009).

Online-only offenders tend to be Caucasian (Babchishin et al, 2011; Henshaw et al, 2015) and younger than contact offenders (Babchishin et al, 2011; Elliott et al, 2009). The majority of studies show that they are often single (Elliott et al, 2013; Ray et al, 2014; Reijnen et al, 2009) and less likely to have had a live-in relationship (Seto et al, 2012; Webb et al, 2007) or the capacity for relationship stability compared with contact offenders (Seto et al, 2012).

However, a small number of studies found that online-only offenders were likely to be married (Burgess et al, 2012; Tomak et al, 2009). Linked to this, online-only offenders were less likely to have children of their own (Jung et al, 2013; Reijnen et al, 2009) and contact offenders were more likely to have access to children (Babchishin et al, 2014). However, Seto et al (2012) reported a trend for IIOC offenders to participate in child-orientated activities at a higher rate

than solicitation offenders (also known as luring or travel offenders) or contact offenders.

Online offenders tend to have good education levels (Burgess et al, 2012; Henshaw et al, 2015) and are less likely than contact offenders or other non-contact sex offenders to have been expelled or suspended from school (Jung et al, 2013). They also had fewer school adjustment problems, such as bad behaviour or poor attendance (Jung et al, 2013). These offenders are likely to be in employment (Burgess et al, 2012; Henshaw et al, 2015; Jung et al, 2013), with some studies finding that online offenders often held qualified jobs or positions of authority (Burgess et al, 2008; Endrass et al, 2009). However, other studies have found no difference in employment problems between online, online solicitation, and contact offenders (Seto et al, 2012) and some have noted that a proportion were students (20 per cent in one study) or were unemployed or receiving welfare/disability payments (17 per cent; Fortin and Corriveau, 2015).

Online offenders had less childhood difficulties than contact offenders (Babchishin et al, 2014), including being less likely to experience family conflict in childhood, parental substance misuse and being more likely to have had available mothers and fathers (Burgess et al, 2012). Compared with the general population, online offenders were more likely to have been physically or sexually abused as a child (Babchishin et al, 2011; Henshaw et al, 2015), but were less likely to have been abused as a child than contact offenders (Babchishin et al, 2014).

The meta-analysis by Babchishin et al (2014) found that IIOC offenders had more factors associated with internet use, such as being of a younger age, having a higher level of education and a greater income.

Sexuality and sexual deviancy

Online offenders have been found to have higher levels of sexual preoccupation than contact offenders (Babchishin et al, 2014; Henshaw et al, 2015). They also appear to have clinical issues of sexual compulsivity (Briggs et al, 2011; Niveau, 2010) and more obsessions, compulsions (Marshall et al, 2012) and problems with sexual self-regulation (Babchishin et al, 2014) than contact offenders. The meta-analyses found that online offenders had higher levels of sexual deviancy than contact offenders (Babchishin et al, 2014; Babchishin et al, 2011), a finding supported by other studies (Henshaw et al, 2015). However, some studies found them to have lower levels of sexual deviancy than contact offenders (Briggs et al, 2011) and Middleton et al (2009) found that 70 per cent of online offenders were classed as low in sexual deviancy. Compared with mainstream pornography users, Stulhofer et al (2010) found that 18–25-year-old Croatian

men who used paraphilic pornography had higher levels of sexual boredom, greater acceptance of sexual myths and higher scores for sexual compulsiveness.

Around half to two-thirds of online offenders reported masturbating to the IIOC they viewed (Howitt and Sheldon, 2007a; Sheehan and Sullivan, 2010; Webb et al, 2007) and the young men in Stulhofer et al's (2010) study who viewed paraphilic sexual material reported higher masturbation frequency and a higher number of lifetime sexual partners than mainstream pornography users. Men who masturbated when they started viewing IIOC were more likely to have a sexual interest in children, although some did not start masturbating until weeks after viewing images (Sheehan and Sullivan, 2010). Comparing online, online solicitation and contact offenders, Seto et al (2012) found that online offenders were more likely to acknowledge paraphilic sexual interests than online solicitation or contact offenders. An earlier study by Seto et al (2006) also found that online-only offenders were almost three times more likely to be identified as a paedophile based on phallometric responses to IIOC than contact offenders, leading Seto et al to suggest that viewing IIOC is a valid diagnostic indicator of paedophilia. It is important to note, however, that the responses given by online offenders in measures of their sexual deviancy may not always be reliable. For example, Buschman et al (2010a) found that the number of online offenders expressing an interest in pre-pubescent children doubled when the polygraph was used.

While they may have higher rates of sexual deviancy and sexual interest in children compared with contact offenders, online offenders may not act on their sexually deviant interests as they want to avoid emotional closeness in relationships (Babchishin et al, 2011). They also have more barriers to offending (Babchishin et al, 2014).

Psychological profile

The psychological profiles of online and contact offenders appear to be similar in the meta-analysis by Babchishin et al (2011), yet the literature by Henshaw et al (2015) reported mixed results. Nevertheless, there is evidence throughout this section and the following section (on social functioning) to suggest online offenders differ to the general population.

No differences were noted between online and offline offenders in their loneliness or self-esteem (Babchishin et al, 2011). However, some studies have found online offenders to have greater problems with emotional loneliness than contact offenders (Marshall et al, 2012) and more difficulties with mood regulation (Magaletta et al, 2014).

A UK study based on a probation sample found that online offenders had higher scores for depression, schizophrenia, borderline features, anti-social features, suicidal ideation and stress compared with a normative sample (Laulik et al, 2007). They also scored significantly lower than the normative population for mania, aggression, treatment rejection, dominance and warmth. The authors suggest that the higher scores in the schizophrenia scales suggest the offenders may be withdrawn, isolated, unconventional and feel misunderstood by others, and that this links with the high proportion not in a current relationship and having few previous relationships (Laulik et al, 2007).

Online offenders may have greater self-control and less impulsivity than contact offenders (Babchishin et al, 2011), and Wolak et al (2008) suggest that this may relate to online offenders having higher levels of education and more professional jobs. Online offenders have also been shown to have a lower external locus of control than contact offenders (Bates and Metcalf, 2007; Elliott et al, 2009).

Social functioning

Many studies present findings to suggest that online offenders may have difficulties with their social functioning. They appear to have low levels of interpersonal functioning (Laulik et al, 2007; Magaletta et al, 2014) and below average scores for warmth (Jung et al, 2013; Laulik et al, 2007) and dominance/assertiveness (Bates and Metcalf, 2007; Elliott et al, 2009; Laulik et al, 2007; Magaletta et al, 2014). This suggests they will be self-conscious in social interactions, unskilled in asserting themselves, lacking empathy in personal relationships and do not put a high premium on close, lasting relationships (Laulik et al, 2007).

Wall et al's (2011) study of probation cases found online IIOC offenders to have higher scores for social concern about showing emotion, greater avoidance, and lower socially desirable reporting compared with contact child sex offenders, non-sexual offenders and non-offenders. Lower levels of socially desirable reporting were also noted in the meta-analysis by Babchishin et al (2011) when compared with contact offenders, along with lower impression management. While Marshall et al (2012) found no significant difference between online and contact sexual offenders on social phobia, online offenders were above the norm and cut-off point for a diagnosis of social phobia.

To add to this, Wood's (2013) clinical experience of working with adult online offenders was that many described a lonely adolescence, where they got left behind by peers and had a difficult path through puberty. Some also described emotional deprivation, bullying or humiliation as a child. This may suggest a longstanding issue for these

offenders and highlights a similarity between young people and adults viewing IIOC.

Finally, Elliott et al (2013; 2009) found that online offenders had a greater ability to relate to fictional characters than contact offenders. A large probation sample comparing online and contact offenders used statistical modelling to determine that increased scores on fantasy, under-assertiveness and motor impulsivity were predictive of online offences (Elliot et al, 2009).

Offence supportive attitudes and beliefs

Online offenders appear to have more victim empathy than contact offenders, along with lower cognitive distortions (Babchishin et al, 2014; Babchishin et al, 2011) and offence supportive beliefs (Bates and Metcalf, 2007). However, O'Brien and Webster (2007) argue that these finding are based on tools that were developed for contact offenders and may not be applicable to online offenders. Using a tool developed to assess online offenders, they found that distorted thinking was an issue (O'Brien and Webster, 2007), as is the case in other studies (Howitt and Sheldon, 2007b; Quayle and Taylor, 2003) where cognitive distortions in online offenders have been noted.

Babchishin et al (2014) reported online offenders to have lower emotional congruence with children compared with contact offenders. Howitt and Sheldon (2007b) also found that online offenders were more likely than contact offenders to view children as a sexual object. They suggest that contact offenders may realise this is not true through their offending while the fantasies used by online offenders may lead them to endorse this view.

Offending history

Most studies show that online offenders have few previous convictions (Faust et al, 2015; Henshaw et al, 2015; Niveau, 2010) and that this differs to contact offenders. Babchishin et al (2014), for example, found that contact offenders were more anti-social, had more previous convictions, and were less compliant with supervision than online offenders.

Online offenders were also less physically aggressive than contact offenders (Tomak et al, 2009; Wolak et al, 2008) and less likely to have a history of substance misuse (Faust et al, 2015; Magaletta et al, 2014; Webb et al, 2007). However, a small number of studies refute this and Seto et al (2012) found little difference in substance misuse problems between online, contact and online solicitation offenders. Jung et al (2013) also found little difference in previous convictions between internet and contact offenders.

Variation in the characteristics of internet offenders

While the above findings suggest some common characteristics among adult online offenders, they are not a homogeneous group. Some authors have, therefore, attempted to explore and develop different typologies of online offenders.

A UK probation sample that profiled online offenders based on their psychometric tests found that they could be divided into clusters in the same way as contact offenders (Henry et al, 2010). Offenders in the 'normal' cluster were emotionally stable and had less pro-offending attitudes, but had higher social desirability. The 'inadequate' cluster had socio-affective difficulties, low self-esteem and high emotional loneliness. The 'deviant' cluster had victim empathy deficits, no cognitive distortions about children and sex, and less social desirability.

Another UK probation study tried to fit internet offenders into one of the five pathways from Ward and Siegert's offending model (Ward and Siegert, 2002) based on their psychometric scores.

Sixty per cent of the sample had elevated scores for one or more of the psychometrics. Thirty-five per cent of the sample were linked to the intimacy deficits pathway, five per cent were linked to the distorted sexual scripts pathway, 33 per cent to the emotional dysregulation pathway, two per cent to the anti-social cognitions pathway, and two per cent to the multiple dysfunctional mechanisms pathway (high on all four pathways). Just under a quarter (23 per cent) had high scores in two or three indicators, mostly intimacy deficits or emotional dysregulation (Middleton et al, 2006).

However, just under half the offenders did not have elevated scores for any of the deficits measures, suggesting that there is a sub-group of online offenders that do not have the same psychological profile as others (Middleton et al, 2006).

Summary of the profile and characteristics of adults who view IIOC

- There are many parallels between the findings from the research on the characteristics of young people and adults who view IIOC.
- Where young people who view IIOC may be more likely to be older than contact sexual offenders, adult online offenders appear to be younger. This is likely related to the fact that the behaviour is being carried out online and the internet tends to be accessed more by older young people (Childwise, 2016) and younger adults (Zickuhr and Smith, 2012).

- Similar to the findings on young people, adults who view IIOC tend to have experienced fewer childhood difficulties than contact offenders, have good education levels and school experiences, and are more likely to be in employment. These findings reflect trends in adult internet use in the USA whereby the internet tends to be accessed the most by those with a higher income and higher educational attainment (Zickuhr and Smith, 2012).
- As with young people, adult online sexual offenders have greater difficulties with social functioning and relationships, display greater sexual interest in children and show greater sexual deviancy and preoccupation than adult contact sexual offenders. They also appear to have fewer previous convictions than adult contact sexual offenders.
- Where the adult literature goes beyond that carried out with young people, it shows that rates of childhood abuse and neglect among online sexual offenders are higher than in the general population, despite being lower than rates among contact sexual offenders.
- There is more research on the psychological functioning of adult online sexual offenders than young people, although the findings from this are mixed; some research suggests they are similar to contact sexual offenders while others have found them to display more psychological difficulties.
- Findings are also mixed in relation to cognitive distortions and while some studies report cognitive distortions to be lower in online sexual offenders than contact sexual offenders, this may be a result of the measures being used, which may underreport true levels.
- The research with adults who view IIOC suggests that they have greater self-control than contact sexual offenders, which may explain the absence of their contact sexual offending.

Characteristics of adult dual offenders (internet and contact offenders)

Fewer studies have profiled the characteristics of adult dual offenders, with most focusing on just online-only or contact offenders, and so less literature was available on this group. However, they were explored as a separate group in the meta-analysis by Babchishin et al (2014) and research findings do highlight some differences between them and online and contact-only offenders.

Demographic and personal characteristics

Dual offenders are likely to be Caucasian (CEOP, 2012) and unemployed (Babchishin et al, 2014; CEOP, 2012) or, if they are employed, working in schools or in care work where they have access to children (CEOP, 2012). They are more likely to live with children or have access to children than online offenders (Babchishin et al, 2014; CEOP, 2012; McManus et al, 2015; Wolak et al, 2011), although they had less access to children than contact offenders (Babchishin, 2014). This led CEOP to recommend that online cases where the offender has access to children should be prioritised (CEOP, 2012). They are also more likely to be living with a spouse or partner than online offenders (CEOP, 2012).

The meta-analysis found dual offenders to have experienced more childhood difficulties than online offenders, but there was little difference in the level of childhood difficulties experienced compared with contact offenders (Babchishin et al, 2014); both dual and contact offenders were more likely to have a history of previous sexual abuse than online offenders.

Sexuality and sexual deviancy

Dual offenders are more likely to be homosexual or bisexual than online offenders and to have a greater sexual interest in children than either online-only or contact offenders (Babchishin et al, 2014). They had more sexual regulation problems than online-only offenders (Babchishin et al, 2014) and had higher levels of sexual preoccupation (Henshaw et al, 2015).

Psychological issues

Dual offenders were found to have more empathy deficits than contact offenders, greater intimacy difficulties and lower scores for impression management (Babchishin et al, 2014).

Offence supportive beliefs

Some studies report that dual offenders may be a higher risk group than online offenders due to their higher offence supportive beliefs and sexual interest in children (Henshaw et al, 2015). Elliott et al (2013) found them to have a greater level of self-management deficits than online offenders, which they suggest may explain their offending behaviour. However, they note that they do not have the same level of cognitive distortions about children as contact offenders.

Offending history

Dual offenders were more likely to have previous convictions than online offenders (Long et al, 2013; McManus et al, 2015; Wolak et al, 2011), have higher levels of anti-social behaviour (Henshaw et al, 2015) and fewer barriers to breaking the law (Babchishin et al, 2014). However, they were similar to contact offenders in that they had more substance misuse and more violent previous convictions (Babchishin et al, 2014).

In terms of their sexual offending, one sample of dual offenders have been found to be more likely than online-only offenders to be involved in producing IIOC and to be involved in grooming (Long et al, 2013; McManus et al, 2015). Long et al (2013) also report that the most prevalent gender and age of the victims in the IIOC possessed by dual offenders tended to match the gender and age of their contact victims (for example, when the majority of images included male victims, their contact victims were male).

Dual offenders were more likely to deny their offences or give no comment interviews (McManus et al, 2015), and were less likely to join a paedophilic online social network or other negative influences than online-only offenders (Babchishin et al, 2014).

Summary of the profile and characteristics of adult dual sexual offenders

- Adults who sexually offend online and offline (dual offenders) appear to represent a distinct sub-group of offender.
- It seems they have more similarities with contact sexual offenders than online sexual offenders in regards to their higher rates of unemployment, greater access to children, greater childhood difficulties and experiences of sexual abuse, more previous convictions, and greater substance misuse problems.
- Like online sexual offenders, dual offenders appear to have a higher level of sexual deviancy and a sexual interest in children than contact sexual offenders. However, their difficulties in these areas appear to be higher than online sexual offenders, which may be related to their commission of contact sexual abuse along with greater empathy deficits, offence supportive beliefs and self-management deficits.
- It is not possible to comment on how these findings may relate to young people as dual offending among young people was not explored in any of the research identified for this review.

Part 3: Is there a link between online/IIOC offending and offline sexual offending?

This final section reviews the evidence exploring the link between contact sexual offending and online sexual offending and/or the viewing of IIOC. The research findings on young people are reviewed first but the amount of literature is small; only four studies have explored the link between young people's viewing of IIOC and their HSB offline, and none of these have been carried out with children or females. One of these studies looked at other forms of online HSB alongside viewing IIOC (Moultrie, 2006) and one additional study discusses the proportion of children and young people known to have used the internet to facilitate a sexual offence in Sweden (Shannon, 2008), but does not explore this in any detail.

There are also two studies (Wolak and Finkelhor, 2013; Mitchell et al, 2014) that look at the proportion of cases perpetrated by young people and young adults that involve the online solicitation of a young person to engage in sexual activity or chat, but again these are not explored in detail. A small number of studies have also been carried out that look at the link between extreme/frequent pornography use and harmful sexual behaviour offline, the findings of which are reviewed here to explore this issue further.

There is a substantial body of work looking at the link between adults' viewing of IIOC and online sexual offending and the contact abuse of a child/young person, which is reviewed in the second half of this section. As the research with adults is more advanced than that with young people, this allows us further exploration of the link between grooming and contact offending, and offers more insight into the link between contact and IIOC offending. It is uncertain, however, how much these findings can be directly extrapolated to the behaviours of children and young people.

Viewing IIOC and offline HSB among young people

Sexual reoffending rates in young people known to have viewed IIOC

Only two studies were carried out that looked at the sexual reoffending rates of young people known to have viewed IIOC (Aebi et al, 2014; Stevens et al, 2013). Overall, these studies show rates of sexual reoffending by young people with HSB to be low, but lower still or not at all for young people viewing IIOC in the absence of known contact offending. It must be noted, however, that these studies rely on officially detected/recorded reoffending and the true, undetected reoffending rates may be higher.

In a follow-up study of around 2.95 years (range nine months to 6.41 years), Aebi et al (2014) found that only one of the 54 juveniles convicted of viewing IIOC sexually reoffended (1.9 per cent sexual reoffending rate) and this was for the sexual harassment of a peer. While eight of the young people viewing IIOC were classed as frequent downloaders of pornography, none of them sexually reoffended. Of the 42 juveniles who did not possess IIOC but were in possession of other illegal pornography (for example, bestiality), one of these reoffended with the sexual abuse of a child (2.4 per cent sexual reoffending rate). Among the 64 young people convicted of a contact child sexual offence (including some who had also accessed illegal pornography), three sexually reoffended (4.7 per cent reoffending rate).

In Stevens et al's (2013) study, there was a sexual reoffending rate of 7 per cent among their sample of young people (referred to a treatment programme) displaying varying types of HSB over 10 years. The type of sexual re-offence tended to match the index offence. Looking specifically at the six young people who viewed IIOC in this sample, none sexually reoffended during the follow-up (mean period of four years and six months). The reoffending figures are not broken down any further based on the initial types of HSB displayed by the young people in the wider sample.

Cross-over between viewing IIOC and contact offending

Three studies in this area have looked at the overlap between viewing IIOC and contact HSB among young people. The findings suggest that there is some level of overlap between the two behaviours although this relationship is small and variable between studies. It should also be noted that they focus on detected rates of offending, which may underreport true prevalence.

Aebi et al (2014) note that six of the 168 juveniles in their sample with a contact offence also had a conviction for the possession or distribution of illegal pornography prior or current to the index offence (3.6 per cent). However, only two of the 96 pornography offenders (combining those who view IIOC and other illegal pornography) reoffended with a contact offence (2.1 per cent). The cross-over rate for image and contact HSB reported by Stevens et al (2013) was even smaller, with only one of 184 (0.5 per cent) contact offenders reoffending with an image offence and none of those viewing IIOC crossed-over to contact HSB. None of the six IIOC offenders in this sample were noted as having engaged in sex play with boys as a child compared with 53 per cent of the 184 child abusers, and none of these had previous convictions of any kind or any sexual allegations. Finally, Moultrie (2006) found that two of the seven young people referred for the possession and/or distribution of IIOC in their sample had other HSB, which included contact child sexual abuse and taking indecent pictures of children in the community.

There were also a further three who were later found to be engaging in 'risky' behaviours in the community (such as following children or using recording equipment in the community). The authors of this study also report that two young people transmitted images of themselves masturbating via webcam, two had written detailed sexual fantasies involving abduction, rape and, in one case, the killing of a younger child, which were emailed to others; and one young person had engaged in the ''real time'' abuse of children online. However, it is not clear if these behaviours are by the same young people or whether they are spread throughout the sample.

Finally, Seto et al (2015) noted a significant correlation between viewing IIOC and engaging in sexually coercive behaviour among young adults. However, the rates of overlap between the two behaviours are unclear from this study.

Viewing frequent/extreme pornography and sexually aggressive/harmful behaviours

In the absence of further research on the relationship between viewing IIOC and contact HSB, we have also reviewed the research looking at frequent/extreme pornography use and HSB. In this, there appears to be a stronger link between the viewing of extreme/frequent pornography and contact HSB than reported in the four studies outlined above. These are all self-report studies that may be more honest and accurate reports of behaviours than the above studies, which rely on the official detection and recording/conviction of HSB. Nevertheless, it is important to note that not all of the young people who watch extreme/frequent pornography reported acting in a sexually aggressive/harmful way.

From a self-report survey of 2,015 male students aged 18 years in Sweden, Svedin et al (2011) found that frequent users of pornography (17 per cent of whom viewed IIOC, 30 per cent bestiality and 29.5 per cent violent pornography) were three times more likely to have committed sexually coercive behaviour involving penetration compared with non-frequent users. Seventy per cent of these reported wanting to try out what they had seen and 52 per cent reported trying acts inspired through watching pornography. However, not all of the frequent users of pornography will have necessarily watched extreme, illegal pornography and so the link between this and the young person's behaviour is tentative.

In a similar vein, Ybarra et al's (2011) two-year longitudinal survey of 10–15-year-olds in the US found that intentional exposure to violent X-rated material over time predicted an almost six-fold increase in the odds of self-reported sexually aggressive behaviour, while non-violent pornography did not. Häggström-Nordin et al's (2005) Swedish survey of 718 17–21-year-olds also demonstrated that high consumers of general pornography (n=220; those watching porn every day/week) reported significantly higher sexual arousal (61 per cent compared with 25 per cent), fantasising about doing things (23 per cent compared with 5 per cent) and trying to realise things seen in pornography (56 per cent compared with 25 per cent) than male low consumers (n= 256; classified as watching pornography a few times a month or less). Finally, Hegna et al's (2004) survey of 18–20-year-old students in Norway found that frequent users of pornography were significantly more likely to gain sexual favours by coercion (14.5 per cent compared with 5.4 per cent) and report that they would likely have sex with a 13–14-year-old (14.8 per cent compared with 5 per cent). In the same sample, 17.3 per cent of the males reported that they had watched "child pornography" and, of these, 15.9 per cent said that they would likely have sex with a 13–14-year-old compared with 15.4 per cent of those who had not watched it (this difference was not significant).

In addition to these self-report surveys, a US study compared the early use of pornography among adolescents imprisoned for sexual offences with adolescents imprisoned for non-sexual crimes (Burton et al, 2010). They found that the adolescent sex offenders (average age = 16.6 years) reported more exposure to pornography before the age of 10 than non-sexual offenders, although both groups had little exposure to IIOC. After the age of 10, adolescent sex offenders also reported seeing more naked children in films and on the internet than non-sexually abusive adolescents. Although pornography exposure was not correlated with the age of onset of abusing others, the number of victims or the severity of the contact offence, exposure to pornography before the age of 10 was correlated with all non-sexual crimes and self-delinquency scales. Exposure to pornography was also

correlated with sexual arousal to males under the age of 12, machoism, sexual arousal to males and females aged 13–18 years, and sadism. Exposure to forceful pornography was not correlated with sexual arousal to rape or the use of force in the contact sexual offences carried out (Burton et al, 2010).

Adults' online sexual offending and the offline sexual abuse of a child

Sexual reoffending

The findings on the reoffending rates of adult online offenders are similar to those for young people in that sexual reoffending is low and lower than contact-only or dual offenders. As reported by Stevens et al (2013) in their study of young people, online offenders are more likely to sexually reoffend online, although a small proportion do go on to commit an offline sexual offence.

A range of studies have been carried out to compare the sexual reoffending rates of adult IIOC offenders compared with other types of adult sex offenders. Findings suggest that IIOC offenders sexually reoffend (contact and internet/image offending) at a lower rate than: other IIOC offenders who also had non-violent offence histories (including non-contact child sexual abuse) and violent offence histories (Eke et al, 2011); 'dual offenders' with a history of contact sexual offending alongside IIOC offending (Seto and Eke, 2015; Wakeling et al, 2011); contact sexual offenders with adult victims or child victims, and paraphilia sex offenders (mainly non-contact) (Howard, Barnett and Mann, 2014); and adults with previous non-sexual offending (Seto and Eke, 2005; looking at IIOC reoffending only). However, these findings are not reported consistently and two studies report that IIOC offenders reoffend with contact sexual offences at the same rate as contact offenders (Faust et al, 2015), or have more sexual reconvictions than non-contact sexual offenders (exhibitionists or voyeurs) and contact sexual offenders (Jung et al, 2013).

A meta-analysis of nine studies exploring the reconviction of adult online offenders over a 1.5–6 year follow-up period reports that, overall, 4.6 per cent of offenders reoffended with some form of sexual offence (Seto et al, 2011). Breaking this figure down, 3.4 per cent reoffended with IIOC offences, 2 per cent with a contact sexual offence against a child, and 4.2 per cent with a violent offence. This suggests that online sexual offenders are more likely to reoffend with the same kind of offence, a finding that has also been reported in other studies (for example, Howard et al, 2014). One study also found the nature and activities performed in the IIOC that the adult reoffended with to be similar to the IIOC they were initially apprehended for (Carr, 2004).

Risk factors for sexual reoffending among adult online offenders

Few studies have explored the risk factors for sexual reoffending among adult online offenders, yet one of the most consistent risk factors identified for sexual reoffending among this group is prior contact sexual offending (Eke et al, 2011; Endrass et al, 2009; Seto and Eke, 2015). Predictors of any sexual recidivism have also been noted as: criminal history (Endrass et al, 2009; Seto and Eke, 2015), conditional release failure and atypical sexual interests (more male than female images, admission/diagnosis of sexual interest in children) (Seto and Eke, 2015). However, substance use, multiple paraphilic interests, marital status, having non-digital IIOC, access to children, and past school grades were not found to significantly predict sexual recidivism in the one study that looked at these factors (Seto and Eke, 2015). Finally, Howard et al (2014) found that ever having a male victim predicted non-contact sexual reoffending, while having a 'stranger victim' predicted contact reoffending.

The viewing of IIOC/extreme pornography has also been found to be a contributing risk factor to the sexual reoffending of contact offenders. Kingston et al (2008) reported that intrafamilial and extrafamilial child contact offenders who viewed 'deviant' pornography (containing violence and/or children) were 233 per cent more likely to contact sexually reoffend (upon release to the community over 15 years follow-up) compared with offenders who did not view deviant pornography. Frequent pornography consumption also increased the risk of reoffending when the offender was high on general and specific risk characteristics, but not for men with a low risk of sexual aggression. Additionally, Neutze et al (2012) report that of the 51 (out of 155) non-convicted paedophiles/hebephiles in Germany who had abused a child in the past six months, 58.6 per cent viewed IIOC (36.7 per cent viewed it daily or weekly and 21.9 per cent viewed it seldomly).

Risk assessment for sexual reoffending

Henshaw et al's (2015) literature review suggests that current risk assessment tools for sexual reoffending are likely to overestimate the risk of reoffending for IIOC offenders. They propose removing items related to non-contact offences and relationships to victims, while items related to previous convictions, violent offending and younger age when offending are more relevant to their level of risk. They also felt that dual offenders may have more diverse sexual interests than IIOC offenders.

Osborn et al (2010), using the RM2000 and Static-99 risk assessment tools to assess adult IIOC offenders, found that these tools classified all IIOC offenders as medium or high risk, yet none of them reoffended in a 1.5–4 year period. When they removed the aggregating factors relating to having a stranger victim and non-contact offence in the

RM2000R, however, 72.6 per cent became low risk, which would appear to more accurately reflect their reoffending rate. The vast majority of these offenders had images rated at the most serious levels (levels 4 and 5 on the sentencing guidelines council classification of IIOC, which indicate penetrative sexual activity and sadism/torture or bestiality; see the Sentencing Guidelines Council, 2003, for more information), particularly among those classed as low and medium risk. Additionally, most of those with a collection of 1,000+ images were classed as low risk, suggesting that image severity and quantity does not predict recidivism. The authors do not compare these findings to reoffending rates for contact offenders.

To address the limitations with the current risk assessment tools when used with online offenders, Seto and Eke (2015) developed a risk assessment tool specifically for IIOC offenders. This was based on age, previous convictions and breaches, sexual interests and the content of the IIOC viewed. The tool was tested on 286 IIOC offenders and the total score predicted both general and sexual recidivism. However, it did not predict sexual recidivism for those with IIOC offences only and worked better for those with a history of dual offending. The authors suggest that this may be because the rates of sexual reoffending were too low in this group for the tool to have the power to detect them. While further research is needed to explore this issue, this study may highlight difficulties in developing a risk assessment tool for IIOC/online offenders given that reoffending rates appear to be so low.

Another risk assessment tool developed specifically for IIOC offenders is the Kent Internet Risk Assessment Tool (KIRAT). This is designed to help law enforcement agencies prioritise the investigation of IIOC offenders who share common characteristics with dual offenders and may, therefore, pose the highest risk of contact sexual offending. The second version of this tool includes 17 variables that examine previous convictions, access to children, current evidence of online and offline behaviour, and other factors. Testing with adult male offenders showed that it correctly classified 97.6 per cent 'high-risk' (had a conviction and/or allegation of a contact sexual offence against a child) and 62.3 per cent of 'lower risk' (no evidence of contact sexual offending) offenders in relation to contact sexual offending (Long et al, 2016). It is, therefore, of interest whether these factors would have equal validity in helping the police prioritise the investigation of children and young people with IIOC offences, and whether they would have utility in helping practitioners to assess the level of risk posed in regards to contact sexual offending amongst children and young people.

Cross-over between viewing IIOC and contact sexual offending

As with the research findings for young people, the literature shows that some adult online offenders do cross-over to contact sexual offending, but that the rate of cross-over is fairly small.

In a meta-analysis of the findings from 24 studies that looked at the previous contact offending of IIOC offenders (Seto et al, 2011), approximately one in eight IIOC offenders had an official history of contact child sexual abuse. However, rates of previous contact abuse appeared to differ according to reporting; 17 per cent of IIOC offenders were officially known to have a previous contact offence, yet self-disclosed previous sexual contact with a child was 55 per cent. In their US study, McCarthy (2010) found that most of the dual offenders committed the offline offence before collecting IIOC, suggesting the viewing of IIOC may be a secondary behaviour following contact offending for some men. Research findings also suggest that the strongest correlation between contact abuse and IIOC offending is the production and distribution of IIOC (Burgess et al, 2012; McManus and Almond, 2014; Wakeling et al, 2011).

Some studies have explored the rates of concurrent contact offending and IIOC offending. In two studies reporting on the same dataset, Wolak et al (2011) found that one in six adult males (out of 1,034) convicted of the possession of IIOC had concurrent contact offences, while Wolak et al (2005a) note that one in six cases that started as an allegation of IIOC turned out to be dual offenders. Smid et al (2015) looked at factors that may predict the uncovering of contact abuse in the investigation of IIOC offences. They found that a significantly larger percentage of direct victimisation was revealed in the same investigation for the suspects with prior direct victimisation (54 per cent) compared with suspects without prior association with direct victimisation (10 per cent). Direct victimisation included contact sexual abuse, online offending and the making of an IIOC.

It is apparent from this research that not all IIOC offenders will abuse a child. However, in their analysis of the risk of contact child sexual abuse from those who possess IIOC, CEOP (2012) conclude that there is a clear link between IIOC offending and contact sexual offending against children. Although causation cannot be established, they suggest that all IIOC offenders should be viewed as potential contact offenders.

Digital devices can be used in the commission of contact sexual abuse and the one study identified for this review that explored this (Say et al, 2015) suggested that the sexual abuse suffered by the child/young person may be more severe in these cases. Say et al (2015) looked at the cases of 662 children and young people (aged 4–18) who had been

sexually abused and referred from the court between January 2012 and May 2013. In 14 per cent (n=93) of cases, victims reported that digital devices were used by the offender to facilitate the abuse. For 49.5 per cent of these, an image of the abuse was recorded by the offender, 44 per cent were threatened about the image, in 21.6 per cent of cases the image was shared with others, and 14 per cent of victims were abused by another offender who knew about the image. Victims of digital forms of abuse were significantly more likely to be exposed to penetrative abuse, recurrent sexual abuse, violence, and abuse from multiple offenders. This suggests that contact child sexual abuse with a digital element may have more serious implications for the victims and the digital form of abuse was concluded to be an extra source of trauma and stress for the victims in this study. There is also emerging research to suggest that online sexual abuse in itself can have as much of a mental and physical effect on the victim as contact sexual abuse (Hamilton-Giachritsis et al, 2016).

Early pornography use and sexual offending/deviancy

Our literature search identified very little research that explored early patterns of pornography viewing among adult sexual offenders. One small study by Howitt (1995) presented the case studies of 11 paedophiles and their use of pornography. The research found that these men were first abused as a child and they then sexually abused their peers, which culminated in them abusing children as an adult. However, none of them viewed pornography prior to their first abusive experience towards others; if they did view pornography, they viewed it after the abuse occurred or around the same time. As adults, they watched mainly adult soft-core pornography but they did find non-sexual pictures of children arousing and many of them had taken pictures, or had wanted to take pictures, of them abusing children. This suggests that the early sexual offending of these men was not preceded by the viewing of pornography.

However, Wurtele et al (2014) found that adult male students with a sexual interest in children were more likely to have been exposed to pornography in childhood. Additionally, Wood's (2011) clinical experience was that adult patients with compulsive use of internet sex and internet pornography had often viewed pornography as adolescents. It is, therefore, unclear how much of a role early pornography use has in the development of sexual offending and deviant sexual interests.

Risk factors for contact sexual offending among those who view IIOC

Jung et al (2013) suggest that IIOC offenders may be more likely to contact sexually offend if they have at least three of the four Finkelhor pre-conditions (Finkelhor, 1984); sexual motivation, lack of internal and external inhibition, and lack of resistance from the child. This is supported by the findings of a meta-analysis of 30 studies comparing online, mixed and contact offenders by Babchishin et al (2014). They found that those online offenders most at risk of crossing-over to contact offending were likely to have high levels of paedophilia, anti-sociality, access to children, and few psychological barriers to acting on their deviant sexual interests. Having prior non-sexual offending histories also appears to be significantly associated with contact sexual offending (Burgess et al, 2012).

In a study by Smid et al (2015) looking at whether contact offending would be identified in police investigations of IIOC offending, four predictors of contact offending were identified: the offender was more likely to have been involved with the police before for a non-sexual offence; police were more likely to confiscate two computers (as opposed to just one) during the house search; and images of victims below the age of five and images classed as 'extreme' (involving the penetration of a child under three and/or violence) were more likely to have been uncovered. These four factors correctly classified 92 per cent of IIOC offenders where contact abuse was uncovered during the investigation. Of the seven IIOC-only suspects identified by these variables, the investigation revealed direct victimisation in four cases (57 per cent).

In the study by Surjadi et al (2010), dual IIOC and contact offenders were more likely than IIOC-only offenders to masturbate to IIOC and download them to an external medium, chat to minors online, send them pornography and attempt to meet them offline. These dual offenders were also more likely to engage in cybersex with adults and had larger collections of IIOC.

The above studies suggest that having more 'extreme' IIOC and those involving children under five years (Smid et al, 2015), as well as having a larger collection of IIOC (McCarthy, 2010), may be an indicator of contact sexual offending. In addition to this, Long et al (2013) found that dual offenders had a higher proportion of still images graded levels three and four than online-only offenders. They also found a correlation between the amount of time spent downloading images and the downloading of images classified at level four, and a link between the years spent downloading images and the number of contact offences carried out. In contrast, a thematic assessment of the risk of contact child sexual offending posed by those who possess still and moving IIOC found no correlation between

the severity of images and the size of image collections and contact offending (CEOP, 2012). Long et al (2013) also found no overall differences between the severity of images or age and gender of the children in the IIOC viewed by online or dual offenders, noting that dual offenders possessed fewer IIOC than online offenders (Long et al, 2013; McManus et al, 2015).

Given the mixed findings in this area, the importance of image severity and the size of the collections as a risk factor for contact sexual abuse remain unclear. It is also important to acknowledge the association between the use of peer-to-peer networks and larger numbers of, and more extreme, IIOC (Wolak et al, 2011). A larger collection with more extreme images may have resulted from the receipt of one large file of images sent through a peer-to-peer network without the offender intentionally seeking out and collecting a large number of images. The ways in which the IIOC were accessed should, therefore, be considered when exploring the size of an offender's collection and the severity of the images they possess in relation to the level of risk they may pose.

A salient feature of online and IIOC offending for many offenders is their contact with other like-minded adults online. For some, this appears to be a way of trading material and getting the material they are interested in (Carr, 2004). However, others suggest that online offenders are at risk of contact offending due to their association with other paedophiles and the influence of the online world (Houtepen et al, 2014).

Cross-over between grooming and online and offline sexual behaviours/offending

There are a number of opportunities in which children can be groomed online, often through social networking sites, chat rooms and online gaming sites (McGuire and Dowling, 2013). Indeed, Wolak et al (2004) reported that almost three quarters of internet-initiated sex crimes against children in the US began in a chat room, and Say et al (2015) note that 6 per cent of 662 sexually abused children and young people in Turkey met their offenders online. Young people are at a stage in their lives when they are becoming more autonomous, expanding their social networks and becoming interested in sex, which may make them more vulnerable to being abused through these means (Ospina et al, 2010).

Indeed, Whittle et al (2014), based on interviews with eight victims of grooming, note that many of the grooming techniques used by adults are typical of adolescent friendship/relationship development, which can make it difficult for young people and their carers to identify risk.

While the typical image of an online groomer is someone unknown to the child/young person, studies have shown that the online offender may be known to the victim (Mitchell et al, 2005) and that known offenders and strangers target similar victims and employ similar grooming strategies (although known offenders may use more deception; Webster et al, 2012).

A number of studies and reviews have been published that focus on adult offenders. Within this literature, different typologies of online groomers have been defined (see Webster et al, 2012) although these are not consistent among all studies and different grooming processes have been identified (Black et al, 2015). Nevertheless, research findings do suggest that grooming is used by offenders in two main ways; the first are fantasy-driven offenders who groom children and young people online in order to satisfy their sexual fantasies and engage in cybersex, but with no intention for offline contact. The second are those who use the internet to locate and groom children and young people with the intention of contacting/meeting them offline for sexual purposes (Briggs et al, 2011; Whittle et al, 2015).

It has been suggested that the second group of online groomers tend to: progress their online contact with the child quickly in order to get to the offline meeting (Briggs et al, 2011); be fairly open and blunt about their sexual intentions (Marcum, 2007; Wolak et al, 2004); and, in a large proportion of these cases, do not pretend to be someone else (Whittle et al, 2014; Wolak et al, 2004). This is not to say, however, that the young person is entering willingly into any ensuing sexual activity, given the groomer's manipulation of them, their inability to fully consent, and the age difference between them and the offender.

Shannon (2008) looked at the cases of 315 adults coming to the attention of the police in Sweden for online sexual offences against a young person. Of note, they found that 13 per cent of these offences were perpetrated by someone under 18 years, and 30 per cent by young adults aged 18–24 years. In support of the above two typologies, they found that: 57 per cent of these 315 sexually abusive incidents involved online-only contact (21 per cent of these offenders were under the age of 18); 22 per cent of cases started online and then lead to an offline contact sexual offence (10 per cent of these offenders were under the age of 18); 14 per cent of cases involved online sexual offending along with offline contact (such as text messaging and phone calls) but no apparent offline sexual abuse, yet this was often suspected (4 per cent of offenders were under the age of 18); and 7 per cent of cases where an adult contacted a young person online who they already had prior offline acquaintance with (Shannon, 2008).

In almost one fifth of the cases where the victim and perpetrator met online leading to a contact sexual offence, the victim and perpetrator were of a similar age with an average age difference of around two years (victim ages ranged from 15–17 years and offender ages from 15–22 years). These cases tended to go from an online meeting to arranging an offline meeting – often attended by the victim's friends – which ended up with the perpetrator sexually assaulting the victim at the first meeting.

The findings from the study by Shannon (2008) suggest that around a third of grooming cases will also involve offline contact/sexual abuse. However, other studies suggest that grooming is more often linked to offline contact, such as that by Wolak et al (2004) who stated that 74 per cent of their identified cases of internet-initiated sex crimes against children progressed to a face-to-face meeting. Even when sexual behaviours do not occur offline following grooming, Briggs et al (2011) found that 35 per cent of 51 offenders convicted of grooming young people in chat rooms engaged in online sexual behaviours, such as masturbating over a webcam.

Young people who are groomed online are likely to be older than those groomed offline, as younger children are less likely to have unsupervised internet access to be able to enter chat rooms and meet potential offenders. This may make it difficult to identify grooming behaviours by adolescents in the same way as that by adults, given that the offender and victim are likely to be closer in age and the activity could, therefore, be passed off as 'age-appropriate' behaviour. However, the intention of meeting a vulnerable young person online in order to manipulate them to engage in online or offline sexual activity appears to be prevalent among young people, as shown by Shannon (2008). Further research is needed to explore this.

Associations between online and offline grooming, viewing IIOC, and the online and offline sexual abuse of a child

A small amount of research has explored the link between IIOC offending, grooming and the online and offline sexual victimisation of a child, and this range of behaviours is factored in to some of the typologies of online groomers (see, for example, Merdian et al, 2013; Webster et al, 2012) that have been developed.

Two studies were identified for this review that explicitly identified young people among the perpetrators of online solicitation offences, some of which will have involved a level of prior grooming of the victim, requests for sexual images and contact sexual abuse. In Wolak and Finkelhor's (2013) exploration of arrests for sex crimes involving online sexual communication with a minor, it was found that 12 per

cent of cases were perpetrated by young people under the age of 18 and 35 per cent by 18–25-year-olds.

The young person was solicited for a sexual image in 55 per cent of all cases (not defined by the age of the perpetrator), the offender was in possession of IIOC in 19 per cent of cases, and a contact sexual offence occurred in 51 per cent of cases. Mitchell et al (2014) also found that 45 per cent of young people who had received an unwanted sexual solicitation were asked to send the perpetrator a sexual picture of themselves. Of all online solicitation cases, the perpetrator was under the age of 18 in 43 per cent of cases and aged 18–25 in 24 per cent of cases (it is unknown how old the perpetrators were when they specifically requested sexual pictures from their victims).

It was also found that 59 per cent of aggressive solicitations, which involved offline contact or attempted offline contact with the victim, were carried out by young people under the age of 18, with 27 per cent by those aged 18–25. It is important to note, however, that the majority of the online solicitations in this study occurred over just one day (59 per cent), which means that any grooming took place very quickly or not at all. In 18 per cent of cases, the online solicitation incident lasted between seven days to one month or longer. These studies show how online solicitations of young people to engage in sexual discussions, produce sexual images and meet up offline may occur alongside each other, a substantial proportion of which are carried out by young people and young adults, and may involve a greater or lesser extent of grooming.

Other studies note that 40 per cent of online solicitation offenders (those using the Internet or related technologies to communicate with minors for sexual purposes, including arranging a real-life meeting) also possessed IIOC (Mitchell, Wolak and Finkelhor, 2005), and another reports that these offenders are significantly more likely to use child pornography (20 per cent) than contact offenders (2.6 per cent; Seto et al, 2012). There is also some evidence to suggest differences in the online grooming behaviours of online-only and dual online and offline sexual offenders. For example, McManus et al (2015) found that adult offenders who abuse children offline are also more likely to engage in offline grooming compared with online-only offenders.

Seto and Eke (2015) looked at the relationship between the online sexual abuse of a child and the viewing of IIOC among those with and without a criminal history. They found that adult IIOC offenders with no known offline offending (sexual or general) used the internet for sexual chat with a minor less often than IIOC offenders who had previous non-sexual or sexual offending (4 per cent of cases compared

with 13 per cent and 18 per cent respectively). Finally, a fifth of the "online child molesters" in the study by Wolak et al (2005b) had created sexually suggestive/explicit photographs of their victims or convinced the victims to photograph themselves or their friends.

Much more research is needed in this area to understand the relationship between grooming, the use of IIOCs, and the online and offline sexual abuse of children and young people.

How might the use of IIOC relate to contact sexual offending in adults?

Much of the debate around the function and use of IIOC relates to fantasy and arousal. Research findings suggest that some adult offenders use IIOC to achieve arousal, to aid and fuel fantasy to achieve arousal, and to develop their sexual fantasies, often by turning to more extreme images over time (Aslan et al, 2014; Quayle and Taylor, 2002). However, the link between sexual fantasy and contact sexual offending remains unclear. Using small samples of IIOC and/or contact sexual offenders, a handful of studies have explored this issue. In some, adult offenders report developing their sexual fantasies based on internet IIOC, which led to contact offending for some men when they became bored/unsatisfied with these fantasies (Aslan et al, 2014). Other offenders report using IIOC to reinforce their fantasies and to act as a 'blueprint' for sexual offending (Quayle and Taylor, 2002). For some individuals, the use of IIOC may intensify their level of sexual arousal, reinforce their cognitive distortions and desensitise them to carry out contact sexual abuse with a child (Quayle and Taylor, 2001).

However, some studies note more of a reciprocal interaction, whereby contact offending develops the offender's sexual fantasies while the virtual space helps them to develop and shape these fantasies further (Wilson and Jones, 2008). In their research with IIOC-only offenders, child contact sexual abuse only offenders, and dual offenders, Sheldon and Howitt (2008) report that contact offenders may need a victim response to generate their sexual fantasy more than IIOC or dual offenders. They suggest that IIOC-only offenders may be less likely to contact sexually offend as they can generate fantasy easier, concluding that there is no simple causal explanation between sexual fantasy and contact offending. Indeed, the most common sexual fantasy reported by the offenders in this study was consensual sex with an adult female, not a child. Finally, Carr (2004) found that the IIOC offenders with a propensity for contact sexual offending in their New Zealand study had a wider interest in sexual offending, and IIOC served as an alternative to this or a way of generating fantasies.

The debate between IIOC, fantasy and contact offending is important for understanding the risk posed by continuing technological developments. Activities such as sexual 'age play' on forums like 'Second Life' (whereby two adults simulate the sexual abuse of a child using avatars in online worlds) have sparked a debate as to whether the first person nature of this activity makes the 'offender' more at risk of abusing a child offline.

Exploring this issue in detail, Reeves (2013) has highlighted the concern around this activity regarding the potential for it to strengthen deviant sexual fantasies, legitimise this activity and lower inhibitions, promote a sexual interest in children, and allow potential offenders to share information and ideas. However, the absence of a causal link between fantasy and reality means that no solid conclusions can be drawn and creates debate as to whether these actions are prosecutable. This is further complicated by the lack of a permanent record of the virtual abuse in that it is carried out 'real-time' and documented images and videos may not be created.

While a teen version of 'Second Life' was available for a short time (now closed down), the main site is aimed primarily at users over the age of 18. However, younger teens can use restricted versions of the site and it is unclear what, if any, age checks there are for users to join the full version of 'Second Life'. This issue is, therefore, likely to have equal significance in relation to adolescent online activity and, in relation to children and adolescents, sparks similar concern and debate as to that regarding the link between violence and aggressive behaviour and playing violent video games. Indeed, Net Children Go Mobile (Mascheroni and Cuman, 2014) found that 8 per cent of 11–16-year-olds across seven EU countries spend time in a virtual world.

There also appears to be a blurring of the boundaries between playing a game in an online world and the creation of fantasy depictions of child abuse, which are illegal under the 2009 Coroners and Justice Act (Coroners and Justice Act 2009, 2009). It is notable, however, that Gavin Smith was charged under the Obscene Publications Act (Obscene Publications Act 1959, 1959) for engaging in fantasy chat online, graphically discussing the sexual abuse of children with another adult. He was prosecuted on the basis that his conversations were "encouraging and minimising" child sexual abuse and could "foster addictions and inclinations or proclivities that the other person never had before". The prosecution in this case did not, therefore, rely on establishing a link between fantasy and reality, but on the ability of the fantasy to influence another person's actions. It should, therefore, be

explored as to whether the Obscene Publications Act can be applied to those who engage in sexual age play in online fantasy worlds, recognising that in this particular case, a record of the conversation was created and could, therefore, be drawn upon as evidence.

Hidden rates of offending and later admissions of abuse

Child sexual abuse is a largely undisclosed crime, and a significant proportion of IIOC and online and offline offences go unknown. This is supported by some of the research literature with adult offenders who disclose larger amounts of abuse and admit to having more deviant sexual interests and IIOC when questioned under polygraph (Buschman et al, 2010a; 2010b), when further into treatment, or when there are few perceived repercussions from later disclosure.

This is demonstrated in a well-cited study by Bourke and Hernandez (2008). At sentencing, 40 of the 155 offenders were known to have committed a contact sexual offence involving a total of 75 child victims. During treatment, however, there was a 59 per cent increase in the number of offenders admitting a hands-on offence (40 'contact' offenders rose to 131 offenders) and the number of victims rose to 1,777. The average number of contact victims for the originally classified 'child pornography only' group was later found to be 8.7. While there are a number of design issues with this study (see Wollert, 2012) that may have inflated the disclosure of additional contact offences and may influence how applicable these findings are to other populations (for example, all offenders chose to have treatment and they were encouraged to make additional disclosures), the findings suggest that an initial classification of an adult as not having a history of contact sexual offending may later turn out to be incorrect. Seto et al (2012) suggest that the disclosure of undetected contact offences are made more often by IIOC offenders (51 per cent), compared with contact offenders (50 per cent) and solicitation offenders (29 per cent; also known as 'luring' or 'travelling' offenders). Cases of contact sexual offending also appear to be missed at initial sentencing; in a sample of 541 IIOC offenders (some who did and did not have prior contact and non-sexual offending histories), around a third of the charges for contact reoffending over an average 4.1 years follow-up were for historical events (Eke et al, 2011). However, rates of reoffending were very low following detection in this study.

Section 3 summary

- The small amount of research carried out with young people who view IIOC suggests that their sexual reoffending rates are low and lower than young people who have abused others offline.
- There does appear to be some level of overlap between IIOC offending and contact sexual offending, although the rates of young people engaging in both behaviours are low.
- These findings replicate those from the research with adult offenders, which additionally show that IIOC offenders tend to reoffend with another IIOC offence than a contact sexual offence.
- Looking more widely at self-reported frequent or extreme pornography use by young people, there appears to be a stronger link between online viewing and the young person's desire to try what they have seen online and possibly their sexually coercive and/or deviant sexual behaviours.
- The research carried out with adults helps us to understand more about the risk factors for reoffending and contact sexual offending among online sexual offenders. These appear to relate largely to prior contact sexual offending, previous criminal history and having a sexual interest in children.
- There are mixed findings regarding the content of the IIOC the offender looks at and future risk of contact sexual offending. Nevertheless, the viewing of IIOC does appear to be associated with an increased risk of further contact sexual offending among those with contact sexual offending histories, although it is unclear why this is so.
- The research with adult offenders suggests that not all adults who groom children or young people online do so with the aim of abusing them offline. There is emerging evidence that this may also be the case among young people. The findings also highlight an overlap between online sexual offending, viewing and soliciting IIOC and offline sexual offending to varying degrees.
- It is unclear how generaliseable the findings from research with adult offenders are to the behaviours of children and young people.

Discussion

What does the literature tell us about the online harmful sexual behaviours (HSB) of children and young people and the relation to offline HSB?

This literature review was designed to explore three main questions relating to children and young people's online HSB. The first was to understand whether the viewing of IIOC online could be classed as developmentally appropriate behaviour, yet the lack of research exploring this meant we could not answer this question. Nevertheless, we were able to establish that viewing pornography online is something that a substantial proportion of children and young people do, especially older adolescents and males. Some of these will view illegal and violent pornographic material, although this is less common, and the likelihood of this may be increased by the frequent viewing of pornography. The research also highlights the blurring of boundaries between sexting – which may be considered a developmentally appropriate, although illegal, behaviour – and the creation and distribution of IIOC among children and young people. Finally, we are able to understand a little more about the motivations for young people accessing IIOC and the way in which this is used. As such, it appears that young people are involved in trading IIOC and may be motivated to view these images out of curiosity, sexual deviancy, and/or peer pressure. However, we are not able to comment on whether images are collected and catalogued in the same way as adult offenders, although this seems less likely based on the limited findings so far.

Second, we aimed to understand whether the profile of children and young people who view IIOC was similar to those who commit contact sexual offences offline. While the research in this area was limited, the findings do highlight differences between the two groups, which largely suggests that those who view IIOC may come from more stable backgrounds than contact offenders, have better education levels and fewer previous convictions. These young people may, therefore, be less likely to come to the attention of social care and other authorities and, as a result, their online HSB may be more likely to go undetected. However, they appear to have more social difficulties and a greater sexual interest in children. These findings are replicated in the research exploring adults who view IIOC, which expand on this by looking in greater detail at their psychological profile and suggest that the absence of contact offending by IIOC offenders may relate to their greater self-control. The adult literature also provides some insight into dual IIOC and contact offenders, which suggests that this group are more similar to contact offenders but that they may have greater difficulties in certain areas, such as

their sexual interest in children. We were not able to comment on any factors that may influence or predict the onset of online or offline offending, nor understand any factors that may influence desistance from online offending.

Finally, the literature reviewed here allowed us to explore the link between online and offline sexual offending among young people and adults. This suggested that the risk of reoffending following an IIOC/online offence is low, and that the level of cross-over between IIOC offending and offline sexual offending is also low. However, much of this research relies on officially detected rates of offending and there is evidence to suggest that this is likely to underestimate true offending rates. While previous contact sexual offending, previous general offending, and having a sexual interest in children were highlighted as potentially important indicators of reoffending or contact sexual offending, it was not possible to conclude the importance of the severity of IIOC viewed as a risk factor. The role of fantasy in the commission of contact sexual abuse among those who view IIOC could be debated from the research carried out with adults, but it is not possible to draw any conclusions about this or show how this relates to children/young people. Nor was it possible to comment on how the internet is used by children and young people to groom other children/young people. Nevertheless, the research with adults highlights the importance of the internet as a way of meeting potential victims, and one study also showed this to be a factor in the offline sexual offending of some young people. It also highlighted, however, that not all adults who groom victims online do so with a view to abusing the child/young person offline.

How confidently can we extrapolate findings from the research with adults to children and young people?

The research carried out with adults who view IIOC and sexually offend online was explored in this review in light of the limited amount of research with children and young people. However, it is unclear how much the findings from the adult literature may relate to young people. The age difference between children and young people who may view IIOC and adults who view these images is an obvious discrepancy. The studies that have explored adolescents' and young adults' viewing of IIOC do not look at the ages of the victims in these images to be able to understand how big the age gap may be. This is important as a 14-year-old found to be in possession of IIOC that involve adolescents may be acting in a more age-appropriate way than those viewing IIOC involving infants, for example. For adults, viewing IIOC would always be deemed sexually deviant behaviour and the same blurring of age boundaries is, therefore, absent.

Another concern is whether the behaviours of adults who view IIOC match the behaviours of young people who do the same. While there is limited literature on how young people use and collect IIOC compared with the research with adults, it would appear that young people do not collect as many IIOC for as long as adults, nor do they appear to catalogue these images in the same way. This may indicate differences in the motivations for viewing IIOC between adults and young people, although the research in this area is limited and solid conclusions cannot be drawn.

Different influences may also be important for young people compared with adults. Peers have a strong influence on children and young people, and the research on young people who view IIOC highlights a relationship between this behaviour and peer behaviours and attitudes. There does appear to be a social element to the online viewing of IIOC among adults in that IIOC may be used to socialise with others, trade with others and gain credibility (Quayle and Taylor, 2003), and networks are also developed between like-minded adults online. It is unclear, however, whether peers have the same influence on adults as they may on young people, or whether they are used more as a way of gaining access to further IIOC, and to validate their deviant sexual interests and activities.

Given that children and young people spend a large proportion of their time on the internet and that this is likely to play a role in their personal and sexual development and social interactions, it may be difficult, and unpractical, to explore online HSB as a distinct behaviour to offline HSB. For adults who will not have grown up with the internet as a main feature of daily life, their online and offline behaviours may be more distinct. Further understanding as to the blurring of boundaries between online and offline HSB among children and young people is, therefore, needed.

Limitations in the literature reviewed

There are a number of limitations in the literature exploring young people and adults' online HSB. The research focuses largely on males, which means we still know very little about online HSB by females and no studies explored this behaviour among children. Where studies with young people have been carried out, the age ranges vary and some include young adults that cross over with the literature on adult populations. Few of the studies carried out with young people used representative samples, and where they were used, differences were found between the findings of those compared with studies with non-representative samples. This calls into question the reliability of many of the research findings in this area.

There are also definitional differences in this area of research, which means that the studies may not be measuring the same behaviours (for example, viewing IIOC versus 'online' sexual offending, which may also encompass online grooming) and this may have led to differences in the findings.

As shown in the research with adults, rates of online and offline sexual offending vary according to whether these behaviours are self-reported or rely on officially detected behaviours, and whether the offender is currently in treatment or not. This means offending rates are likely to be higher than the studies in this review suggest, along with the risk of reoffending and contact sexual offending. It also means that comparisons of online and offline offenders are likely to include some dual offenders in each group, which may skew the findings and mask true differences between them. The research with young people and adults also suggests that there is a level of cross-over between viewing IIOC and viewing other types of extreme pornography, such as bestiality and violent pornography. In spite of this, studies tend to have focused just on the viewing of IIOC when looking at the characteristics of offenders and the risks they pose. This means that other important elements of online pornography use may have been ignored, thus limiting our wider understanding of these individuals and the risk they may pose.

What do the findings suggest about assessment?

A small number of studies have explored the use of standard sex offender risk assessment tools with adult online sexual offenders. However, the findings from these studies suggest that these are unlikely to be effective at estimating risk among this group. Even those that have been adapted for use with online sex offenders may still over-estimate risk in a proportion of cases (Henshaw et al, 2015; Osborn et al, 2010) and may only work for those who also have a history of contact sexual offending (dual offenders; Seto & Eke, 2015).

Further research is, therefore, needed to determine if there are useful risk factors that can be used to predict the likelihood of contact sexual offending or reoffending among online/IIOC offenders within a standard risk assessment format. No research was identified that has explored the ability of standard sexual offending risk assessment tools for young people to predict risk among those who view IIOC or display HSB online. However, the overlap and potential blurring of boundaries between online and offline realities and behaviours for children and young people may mean that an assessment of online risk needs to be integrated more into standard risk assessments assessing offline risk. The difficulty assessing risk of online sexual offending highlighted in Seto and Eke's (2015) study also creates questions as to

whether risk of sexual recidivism could be successfully identified given its apparent low prevalence among young people.

Suggestions for further research

The limited research exploring the online HSB of adolescents, along with the absence of research exploring this behaviour among children and girls, highlights a need for further research in this area. It is important that these studies use larger samples of young people and, where possible, use representative samples to explore the prevalence of these behaviours within wider populations.

Further research should also be carried out to explore the types of images viewed by children and young people along with their motivations for accessing this material. Doing so would help to understand this behaviour further and explore the developmental appropriateness of the images being viewed. In addition to this, further research is needed to understand more about the significance of the online environment for the young person in order to aid our understanding of their online HSB. Of particular significance is understanding whether there are certain facets of the online environment that may be an indicator of risk.

Exploring the ways in which children and young people access IIOC (such as their use of peer-to-peer networks and the "dark web") and their use of these images is also important in understanding their motivations for this behaviour. This should include exploration as to how many images they access/download and for how long this behaviour typically goes on for, to further understand their trading of these images, and to explore whether they catalogue these images in the same way as adult offenders.

While some of the research with young people who viewed IIOC noted their education levels/success, none of the research in this area has explored the prevalence of online HSB/viewing IIOC among children and young people with learning difficulties. We know from other research that they are overrepresented among young people with HSB (Hackett et al, 2013) and it is, therefore, important to understand online HSB among this group. In particular, it is important to understand the motivations of these children and young people in accessing IIOC or displaying online HSB. Children and young people on the autistic spectrum, for example, may do so as part of the obsessions and repetitive behaviours associated with this condition, or as a challenge to crack a code on a website in order to gain the material. As such, accessing these images may not necessarily have a strong sexual motivation behind it.

It is also important that research is carried out to look at dual online and offline HSB among young people, and to explore the grooming behaviours and more general online HSB among this age group. This research should include a focus on the characteristics of the young people who engage in these behaviours as well as further exploration as to the range of behaviours displayed and the cross-over between the different forms of online and offline HSB (for example, grooming and the use of IIOC). This would help to understand the prevalence and function of these behaviours and how they may be similar or different to this behaviour in adults.

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Appendix A: Search strategy

	Q1		Q2		Q3	
Database	**Search terms[1]**	**Hits**	**Search terms[2]**	**Hits**	**Search terms[3]**	**Hits**
NSPCC Library catalogue	– Child abuse images OR Pornography AND adolescen* OR children OR children's attitudes OR young offenders OR sexual behaviour OR peer groups OR harmful sexual behaviour OR child development – Sexting	30	– internet AND offen* AND typolog* OR behavio* OR personalit* OR characteristic* OR psychodynamic* – internet AND offen* AND contact OR crossover OR "cross-over" – internet AND offen* AND start* OR onset OR begin* – "sex offenders" OR "sexual offences" AND start* OR onset OR begin* – contact OR crossover OR "cross-over" AND start* OR onset OR begin* – internet AND offen* AND desist* – desist* – "sex offenders" OR "sexual offences" AND stop* – "harmful sexual behaviour" AND contact OR start* OR onset OR begin* OR desist* OR stop* AND NOT offen* – "harmful sexual behaviour" AND internet AND typolog* OR behavio* OR personalit* OR characteristic* OR psycho* AND NOT offen*	129	– risk AND reoffending OR re-offending OR recidivism AND internet – Internet AND recidivism – recidivism AND contact – "child abuse images" AND recidivism – internet OR "internet safety" AND offen* AND Contact OR crossover OR cross-over – "internet" AND "recidivism" OR "reoffending" OR "re-offending" AND "factors" OR "causes" – "harmful sexual behaviour" OR ("sexual behaviour" AND children) AND internet OR "child abuse images" – "harmful sexual behaviour" OR ("sexual behaviour" AND children) AND internet OR "child abuse images" OR pornography	121

	Q1		Q2		Q3	
Database	**Search terms[1]**	**Hits**	**Search terms[2]**	**Hits**	**Search terms[3]**	**Hits**
SCIE	– "Child pornography" AND "internet" OR "adolescence" OR "children" OR "young people" OR "young sex offenders" OR "child development" OR "development" – "Pornography" AND "child development" – "child abuse images"	0	Internet AND sex offenders – Sex offenders AND start* OR begin* OR onset OR crossover OR cross-over – Internet AND sex offenders AND stop* OR desist*	20	– Internet AND grooming AND contact – Internet AND child AND adolescent AND abuse – Internet AND contact AND child AND adolescent	44
Ingentaconnect	– Child abuse images – Child pornography – Sexting	6	– "sex offenders" AND internet – internet AND (start* OR begin* OR onset OR crossover OR cross-over) – contact AND (start* OR begin* OR onset OR crossover OR cross-over) – internet AND sex* – internet AND desist* – internet AND stop*	14	– internet OR online AND child sexual abuse OR pedophilia OR sexual offen* AND contact AND groom* – risk AND recidivism OR reoffending OR re-offending AND internet OR online AND child abuse images OR child pornography – child porn* AND child abuse images OR indecent images – child porn* AND child abuse images OR indecent images AND sever* OR extreme – child porn* AND child abuse images OR indecent images AND fantasy	10

	Q1		Q2		Q3	
Database	**Search terms[1]**	**Hits**	**Search terms[2]**	**Hits**	**Search terms[3]**	**Hits**
PubMed	– Child abuse images – child pornography – Sexting – child abuse images OR child pornography AND Child development OR sexual behaviour – child abuse images OR child pornography AND adolescent behaviour/psychology – child abuse images OR child pornography AND sexual behaviour/psychology – Erotica/psychology AND children OR adolescen* OR teenage* OR young people OR juvenile – Erotica/psychology AND risk-taking – "self taken" OR "self generated" AND image* AND adolescen* OR teenage* OR young people OR juvenile	27	– Internet AND offens* AND psychol* OR (profil* OR characteristic*) – Adolescent behavior AND (psychol* OR profil* OR characteristic*) AND internet AND (sex offens* OR sexual) – Internet AND offens*AND (sex or sexual) AND (start* or onset* or begin*) – internet and offens* AND (contact OR cross-over OR crossover) – (Offens* OR offend*) AND (sex or sexual) AND internet AND (desist* OR stop*) – (Offens* OR offend*) AND (sex or sexual) AND (start* or onset* or begin*) – (Offens* OR offend*) AND (sex or sexual) AND (start* or onset* or begin*) AND (adolescent* or juvenile*)	60	– (child abuse images OR child pornography) AND sexual behaviour AND children – (child abuse image OR child pornography OR sexting) AND harmful sexual behaviour – (adolescent OR adolescent behaviour) AND erotic /psychology) AND behaviour, sexual – Fantas* AND child abus* Images AND offen* OR contact – Child abuse images OR child protection AND teenagers OR adolescent* – Effects pornography (teenagers OR adolescent*) – Risk (reoffending OR re-offending OR recidivism) AND (internet OR child abuse images OR child pornography) – Risk (re-offending OR reoffending OR recidivism) AND (internet OR online) – Internet AND child sexual abuse AND contact – (internet OR online) AND (child sexual abuse OR pedophilia OR sexual offen*) AND (contact OR victimisation OR victimization)	165

	Q1		Q2		Q3	
Database	**Search terms**[1]	**Hits**	**Search terms**[2]	**Hits**	**Search terms**[3]	**Hits**
Google Scholar (looking at the first 7 pages of returns)	– "Child abuse images" OR "child pornography" AND "adolescents" AND "access" OR "development" – sexting	22	– psycho* OR profile* OR characteristic* AND internet AND sex* AND (offend* OR offens*) AND (adolescen* OR juvenile or child*) – internet AND contact – internet AND sex* AND (offend* OR offens*) AND (start* OR begin* OR onset OR crossover OR cross-over) – internet AND sex* AND (desist* OR stop*) – internet AND "harmful sexual behavior" – internet AND "harmful sexual behaviour"	19	– "child abuse images" OR "child pornography" effects on young people – "child abuse images" OR "child pornography" AND harmful sexual behaviour – "child abuse images" OR "child pornography" fantasy contact offen* – Internet AND (reoffending or re-offending OR recidivism) AND contact offen* – (Internet OR online) AND (child abuse images OR child pornography) AND (reoffending or re-offending OR recidivism) AND contact offen* – Internet AND grooming AND Contact offend*	83
Search of reference lists		4		3		1
Total hits= 758		**89**		**245**		**424**

All searches were carried out for the years 2000–2015 only. 'Hits' refer to the number of articles downloaded from the search engine. Where the resulting number of hits is 0, this is because they were deemed irrelevant or duplicated the results from earlier searches. Searches were carried out in the order in which they appear in the table.

1 Excluded any records that did not explicitly mention child pornography/child abuse images.

2 Unable to find research relating specifically to desistance from internet offending so broadened this to desistance in sexual offending more generally. Excluded serious case reviews.

3 Concentrated on reoffending with an internet offence as too wide to open the search to look specifically at contact reoffending.

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